CONSUMERS' GUIDE Separate No. 10-M

UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMERS' COUNSEL DIVISION
WASHINGTON, D. C.

WHEN YOU BUY COAL

Tips to consumers who want to make their coal dollars count in maximum fuel values.

It's in the spring — not winter — when the wise consumer seriously ponders the problems of coal buying. Then prices are usually at their lowest. The cold weather that bears down on the thermometer bears up on prices — sometimes lifting them a dollar above their April levels.

But bargains come to those not only prudent but lucky enough to be able to buy when low-price seasons roll around. For those who were neither last spring, a present guide to buying coal has its immediate uses. For the rest, we anticipate next April's problems.

Those dusty lumps of coal which you feed to your furnace and your stove have a pedigree which extends millions of years beyond the first recordings of time. They are the product of the slow decay of plants which flourished in a world that even today is a mystery to scientists. In prehistoric eras there were dank swamps, overgrown with plant life, where today coal mines are burrowed deep into the earth. That plant life decayed, was gradually covered with sediment, and then, by a process that took thousands of centuries, was transformed into the material that is a basic fuel for furnaces in home and industry today. Geologically minded consumers interested in this romance of the formation of coal should go to a natural history museum and there see lumps of coal which have retained through the ages, the lacy imprints of prehistoric ferns, shrubs, and other plants which formed them.

Decayed vegetable matter in the process of forming coal first becomes peat, then lignite, then bituminous coal, and finally anthracite. Throughout the United States there is coal in each of various stages of development: Peat beds in Wisconsin and Michigan; lignite fields in North Dakota and Texas; the sub-bituminous coal beds west of the Mississippi River; bituminous coal fields in Pennsylvania, West Virginia, Ohio, Illinois, and other States; and the anthracite beds in Pennsylvania.

Coal began to be used generally for heating purposes in the latter part of the eighteenth century. Today coal is consumed at a rate which is many millions of times faster than the rate at which coal is being manufactured by nature. Some day we may have to face the problem of the exhaustion of coal resources. Today, however, there is in America alone sufficient coal for our needs for hundreds of years to come.

Chemists tell us that coal is composed of carbon, hydrogen, and various earthy materials, but after years of study we still do not exactly know how these constituents combine to form coal. When coal is heated the hydrogen and part of the carbon are driven off in the form of gases. This part of the coal is called the volatile matter. The part of the carbon that remains in a solid state is called fixed carbon.

After coal is completely burned, the earthy material in it remains. This is the mud that was deposited with the vegetable matter in the swamps where the coal was formed. Annoyed coal consumers call this mud the ash.

Consumers who fire their own furnaces know that when they shovel coal into their fires, dense smoke appears which seems to be stifling the fire. Fire then licks up between the coals and the smoke is illuminated by a bright orange flame. This smoke is unburned volatile matter from the coal. Unless the volatile matter is consumed by the flames it goes up the chimney in smoke, wasting the consumer's fuel dollar, poisoning the atmosphere of the city where he lives and smudging the buildings in his city to a dirty, dismal gray. Ordinarily the more volatile matter coal contains the more it will give off this heavy smoke.

Heating plants may be designed to burn the volatile matter as fast as the coal gives it off, but in most cases this is not achieved even in plants where smoke-consuming devices are installed, and where the firing is done by a professional furnace tender. In the home it is more difficult to burn a high-volatile coal, that is coal containing a large percent of volatile matter, without smoke. Since the higher-volatile coals are the cheapest coals, it is worth learning how to use the cheapest coal which household furnaces can handle. Inventive genius has made real progress in using these cheap coals by developing automatic stokers for the house-heating furnace. The machines feed the coal gradually to the fuel bed so as to consume all the smoke before it can escape from the furnace.

Fixed carbon is the source of most of the heat in coal, consequently its most important ingredient. It does not smoke when it is burned. Coke and anthracite have most of their combustible matter in the form of fixed carbon. For this reason they are sometimes called "smokeless fuels."

Another constituent of coal, the ash, is a total loss to the consumer. It does not burn, it gives no heat, and, most annoying of all, it must be disposed of at considerable labor or expense. The ash also has another quality which makes it objectionable. It melts. When ash melts at a low temperature, as some ashes do, it forms a slaglike mass in the bottom of the fire pot which is known as clinker. The higher the melting or fusion temperature of the ash the less likely it is to form clinkers. Proper firing of the furnace, too, may reduce the tendency of ashes to form into clinkers.

Water is the other major constituent of coal. Relatively undeveloped forms of coal such as peat, lignite, and sub-bituminous coal contain more water than Eastern bituminous coal and anthracite. Water in coal reduces its worth, since the water doesn't burn and must be vaporized before the coal will burn. Not all water found in coal is a natural part of the coal. Coal stored by dealers outdoors may absorb moisture.

Sometimes unscrupulous coal dealers have been known to short weight consumers by watering coal before weighing it. Watering coal after weighing reduces dust and is a help to the household consumer.

Heat, of course, is what consumers really want when they buy fuel. Consequently the most important quality of fuel is its ability to give off heat. Engineers determine the amount of heat which fuel gives off by burning the fuel completely under perfect conditions and by measuring the amount of heat given off. The British thermal unit, Btu for short, is defined as the amount of heat necessary to raise the temperature of 1 pound of water 1 degree Fahrenheit.

Number of British thermal units in a particular kind of coal is not an absolute measure of its value to the consumer, however, because the British thermal unit content is determined under perfect conditions. Under the imperfect conditions that exist in the home, the heat that is actually derived from the fuel is considerably less than the potential heat contained in the fuel.

Engineers have a way of measuring the actual heating value of a coal against its British thermal unit content. They call this comparison the "utilization efficiency" of the coal. If a particular fuel has a British thermal unit content of 100 and if only 75 of these British thermal units are actually obtained from the fuel when it is burned in the furnace, the ratio is 75 to 100 or 75 percent. This 75 percent is the "utilization efficiency" of the fuel. This efficiency varies considerably with the heating plant, the fuel, and the fireman.

Here's how the "dollar efficiency" of a particular fuel is determined: Suppose a certain fuel costing $10 a ton contains 20 million British thermal units. The cost of each million British thermal units is $0.50. If in actual practice the purchaser of this coal is able to get only 10 million British thermal units for every 20 million in the ton -- its "utilization efficiency," that is, is only 50 percent -- then the cost per delivered million British thermal units becomes $1.

Price per ton of coal, then, is not the cost of heat. When a household consumer buys coal, the dealer should be able to say how many British thermal units it contains; and to figure very accurate heating costs, the consumer needs to know the efficiency with which the coal is being burned and the heat transmitted to the house.

Large companies purchase coal by specification; heating engineers write the specifications and chemists analyze the delivered coal to see if it conforms to them. But this is an expensive procedure, so costly that the Federal Government uses it only for purchases of coal in lots of more than 300 tons.

Consumers buying coal will find the use of specifications and chemical analyses too expensive unless they are members of cooperatives like one in Cleveland which guarantees the quality of the coal it sells to its cooperators. Other consumers must ask their dealers to certify to the qualities of the coal they sell and depend upon their reliability for accurate descriptions.

Anthracite, or hard coal, rates high as a clean source of heat. It is free-burning; that is, the pieces of coal do not swell, soften, or cake together when it is burned. It is delivered to consumers screened and graded according to size, and it has very little coal dust. It burns with a blue flame without smoke. Anthracite has a high fixed carbon content — usually more than 92 percent — and a low percentage of volatile matter. It burns more evenly for longer periods than other coals and consequently requires less attention from the householder. Against these advantages, anthracite usually comes at a higher price per ton than other coals.

One pound of anthracite contains 12,500 British thermal units. The average pound of anthracite in the average home furnace can be burned at an "efficiency" of 60 percent. At a cost of $13.50 per ton, the anthracite user pays 90 cents for each million delivered British thermal units. This cost, of course, is only a general guide to consumers, for various types of anthracite coal will contain more or less heat units than this and will cost more or less than $13.50 per ton, depending upon the consumers' nearness to the anthracite fields.

Anthracite is usually sold in seven sizes. From big to little they are: Egg, stove, chestnut, pea, buckwheat, rice, and barley. As the size of anthracite diminishes, the ash content increases, and the British thermal unit content decreases. However, price also decreases with size. Consumers must determine for themselves the real heat cost of the different sizes.

Semi-anthracite coal is not quite as hard as anthracite. It, too, is delivered screened, but it contains more dust than anthracite. Its fixed carbon content is usually from 86 to 92 percent. Since it has more volatile matter in it, it burns first with a yellow flame, which afterward changes to blue. Semi-anthracite burns more readily and more rapidly than anthracite. Bituminous coal is a soft coal containing a high percentage of volatile matter. For this reason it burns with considerable smoke and a yellow flame. Ash content of soft coals varies from very low to very high, depending upon the particular region from which the coal comes.

Three general types of bituminous coal are included in this group: low- and medium-volatile bituminous; high-volatile bituminous; and sub-bituminous. Low-volatile bituminous is the highest in fixed carbon content and the lowest in volatile-matter content. It does not smoke very much and is usually sold as a semi-smokeless fuel. The fixed carbon content of bituminous coals varies from about 45 percent for the sub-bituminous varities to more than 78 percent and less than 86 percent for the low-volatile bituminous varieties. These figures are on a dry-mineral-matter-free basis. The British thermal unit content varies from 9,000 to 15,000.

Pocahontas coal is one variety of low-volatile bituminous coal. The best of this coal, at a cost of, say, $9 a ton, has a British thermal unit content of 14,800; it can be burned with an efficiency of about 55 percent or more. This delivered cost for each million British thermal units is about 55 cents.

High-volatile bituminous coal at $7 a ton, with a British thermal unit content of 13,200 and a combustion efficiency of 52 percent, costs 51 cents per delivered million British thermal units. This coal is sold under various names: High Volatile Fairmount, Dorothy Splint, High Volatile Kentucky, Hocking Valley No. 6, Cambridge No. 7, Eastern No. 8.

A great variety of bituminous coals are on the market with many differences in British thermal unit content, ash content, and fixed carbon content. Consumers may obtain more exact descriptions of the particular coal they buy by writing to the United States Bureau of Mines for the analysis of coals by States.

Bituminous coal users often complain of expensive dust. To avoid this dust, the coal may be watered or oil-treated before it is brought into the house. It is a good idea, too, to purchase bituminous coal in as large quantities as is possible, for the less frequently the coal is delivered into the home the less dust will result.

Bituminous coal comes in these sizes: lump, egg, stove, nut, pea, stoker, and slack. Egg and stove types are used most often by domestic consumers, while the stoker size is recommended for use with "automatic fireman."

Coke is coal which has been heated in huge ovens until all the volatile matter has been driven off. The gases when driven off are burned for fuel in steel furnaces and other manufacturing plants. Many valuable coal-tar products, such as saccharin (which is sometimes substituted for sugar), dyes, and medicines are manufactured from the liquid byproducts of coal carbonization.

Coal heated in this manner is transformed into dull black, porous lumps. These lumps, the coke, are high in fixed carbon content and contain practically no volatile matter. Because the volatile matter is almost completely driven off, coke burns with no smoke. The coking treatment does not effect the ash content of the coal. Coke therefore contains a high percent of ash which reduces slightly its value as fuel.

Loss of the volatile matter makes coke a fuel which burns less readily than coal. Consumers who change from coal to coke often find that their furnaces have a tendency to go out easily. Careful firing, however, will overcome this difficulty. Other difficulties attached to the use of coke are: its bulkiness, which necessitates larger furnaces and greater storing space; and its large ash content which results in the formation of clinkers.

Against these disadvantages there may be set its relative smokeless-ness and its greater heating efficiency. In cost, it scores low. At $8.50 per ton, for instance, a grade of coke containing 13,200 British thermal units burned with an efficiency of 60 percent, costs consumers only 55 cents per million delivered British thermal units.

Coke from coal comes in four standard sizes: lump, egg, nut, and pea. The egg size has been found preferable for the ordinary-sized stove and furnace.

So much for quality in coal.

Next important buying tip is to check on how much coal you get in a ton. There are two kinds of tons, the long and the short. One weighs 2,240 pounds, the other 2,000 pounds. Many cities prescribe which ton shall be used in the sale of coal. Consumers are probably best served when the unit prescribed by law is the 2,000-pound or short ton. Whatever the local law in the case may be, it's a wise consumer who knows it and keeps an eye on its observance.

In Washington, D. C., the law requires that coal be sold by the long ton. In 1933 some coal companies met and agreed among themselves to reduce the price of coal per ton, but to change from the long to the short ton. The cut in price was not great enough to counterbalance the cut in weight. In fact, coal dealers, by this device, were able to make a profit of half a million dollars in 1 year. The superintendent of weights and measures in Washington then stepped into the picture. As a result, consumers of coal in Washington today get a full 2,240 pounds required by law when they buy a ton of coal.

Protection for the consumer who wants to be sure that he is getting every pound that he pays for, and for the honest dealer who gives full measure, must come from local weights and measures laws and enforcement. In some cities officials are authorized periodically to check dealers to see that they deliver a full ton to consumer coal bins. The National Conference of Weights and Measures Officials has drawn up a model law as a standard for local and State legislation.

Under this model law, coal dealers would fill out duplicate weight-bills, showing how many tons of 2,000 pounds are in the sale; one weighbill goes to the consumer, the other is held by the dealer so that at any time a weights and measures official can check back on it if necessary. Careful consumers know their local law and show a healthy curiosity about its enforcement.

Economy in heat comes not only from buying the economical kind of coal and knowing you are getting all the coal you are paying for. Choosing the size to fit the fire pot in the furnace is important, too. Egg coal ordinarily should not be used in fire pots which are less than 24 inches wide and 15 inches deep. Stove coal takes a fire pot that is at least 16 inches wide and 12 inches deep. Chestnut coal may be burned in fire pots that are 20 inches wide and 10 inches deep. The smaller sizes require small measure grates and special drafts. These sizes are used, however, with automatic stokers, and in some cases the savings resulting from the use of smaller coal sizes may make the installation of an automatic stoker economical.

Keeping costs down depends, too, on the furnace and the fireman. Coal burned in a properly tended furnace will be more efficient than coal burned carelessly. Coal burned in a furnace in good repair will be more efficient than coal burned in a furnace that is in disrepair.

Proper firing of the furnace is important in obtaining full fuel value for the fuel dollar. For full information about firing, consumers should write to the Superintendent of Documents, Washington, D. C., for the Bureau of Mines' publication, "Questions and Answers for the Home Fireman." Enclose 5 cents in coin. Generally, one rule is to use uniformly sized coal. Another is to maintain a uniform fuel bed without holes and adjust dampers to maintain an even flow of heat. Most common mistake of home firemen is to burn their furnaces furiously for a short time, then shut them off.

Most fire builders, too, build fires first with a layer of paper, then a layer of kindling, and finally a layer of coal. The better way is to reverse this process. Starting with the coal, then putting on the kindling and the paper on top of the coal results in less smoke and more complete burning of the gases given off. In adding coals to a going fire, instead of shoveling the coal directly on the fire, home firemen should first push the hot coals to the back or to one side of the furnace, thus creating a pocket down to the grate where the fresh coal is shoveled. This, too, reduces the loss in heat up the chimney.

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UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMERS' COUNSEL DIVISION
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A QUIZ ON ICE CREAM

When you buy ice cream, do you ask: How pure is it? What's in it? How much air does it contain? Do I get full measure?

Ice cream buyers ordinarily are looking for a mouthful of flavorsome internal air conditioning. But no ice cream fancier wants to trade a small amount of discomfort from the heat for a milk-borne disease. Whether or not he poses ice cream question No. 1, when he asks for a pint of chocolate, he still wants to be sure that it is a pint of pure chocolate ice cream he is buying. Consciously or unconsciously, he asks, "Is it pure?"

To this question there should be only one answer: "Of course." Otherwise the public health authorities wouldn't let it be sold.

But pure ice cream, like pure milk, depends upon a law or ordinance and its enforcement. As alert milk consumers know, there is a checklist of specifications which guarantees them pure milk. Since ice cream is a milk product, the ice cream checklist, as might be expected, reads like the milk list.

The milk and cream which go into ice cream, or the ice cream mix, which is the milk and cream plus the other ice cream ingredients, should be pasteurized.

Ice cream should be free of visible dirt and of pathogenic organisms, which are experts' words for disease-bearing bacteria.

Ice cream plants should be sanitary enough so that there is no possible chance of contamination. (Refrigeration is compulsory for ice cream all the way from milk to the consumer.)

Synthetic flavors where they are permitted should be scrutinized carefully, and artificial colors where they are permitted should only be the kind that have been certified as harmless and pure by the Food and Drug Administration.

Finally, the number of bacteria per cubic centimeter in ice cream should be limited.

Milk consumers in some cities have come to rely on milk grades as their guarantee of purity. But grades sometimes may be trade fictions, not based on any official standard. There are, however, official ice cream grades in some cities, which, like milk grades, apply only to purity and not quality. In Memphis, for example, the difference between Grade A ice cream and Grade B ice cream is chiefly a difference in the number of bacteria per cubic centimeter: 30,000 for Grade A ice cream, 50,000 for Grade B ice cream.

Grades, however, sum up more than bacterial content. They are usually a measure of all the factors which go to make up pure ice cram. But there are at least 2 things consumers should remember about them. Numerical grades are less desirable than letter grades since numerical grades give an impression of accuracy which is unwarranted. The factors which are totaled up into a numerical grade are not so precisely measured that there is much difference in sanitary safety between a score of 96 and 97. On the other hand, differences between Grade A ice cream and Grade B ice cream are real differences. The second important thing to remember about ice cream grades is that they measure only purity, and that ice cream may be as sterile as a surgeon's scalpel and as pure as distilled water, and still be a poor quality ice cream.

Purity, obviously, isn't something that can be detected in ice cream by looking at it in the freezer. Just as in the case of milk, ice cream purity is determined finally by what's in the ice cream ordinance and the way the ordinance is enforced.

When consumers get down to the matter of ice cream purity they learn right off that they can't depend upon a Federal law, or upon a State law, but they must look to their cities to enforce purity.

They can, however, get some help from the Federal Government. A uniform ice cream ordinance, for example, is now in the process of formulation by the United States Public Health Service, the same agency which worked out the Standard Milk Ordinance. This ordinance is not ready yet, but when it is finally published, the CONSUMERS' GUIDE will give consumers notice of the event.*

Another way consumers can get help from the Federal Government is by reading its buying specifications for ice cream which it purchases for public institutions. So far as purity is concerned the Federal Government requires that ice cream be pasteurized, and that the number of bacteria in the ice cream not exceed 50,000 per cubic centimeter. It bars the use of artificial flavors altogether in its ice cream, but it permits the use of artificial colorings so long as they have been certified by the Food and Drug Administration.

There is a Latin tag which says one shouldn't argue about taste. It could also be phrased to say that each person has a right to his own food fads and prejudices. This isn't to be taken too seriously where children are concerned, but if you propose to argue about ice cream flavor with another adult you might just as well save your time. Some like rich ice cream, some like it less rich, some like ice cream syrupy

*Issued May, 1940, by Public Health Service.

some like it hardly flavored at all. Obviously anyone who tries to be pontifical on ice cream flavor is just inviting contradiction.

But if nothing can be said finally on flavor, something can be said about the food value of ice cream.

Ice cream contains milk, cream, fruit flavors sometimes--chocolate, vanilla, or whatever you happen to think of at other times in the way of flavor--gelatin, sugar, starch sometimes, eggs sometimes, and nuts sometimes.

Of them all, the milk, the cream, and the sugar are the most important constituents. Milk and cream add fat to ice cream, plus calcium, phosphorus, protein, Vitamin A, and Vitamin G. The sugar, of course, is a carbohydrate.

Since both food value and texture depend largely upon the cream in ice cream, and since by its name ice cream is supposed to have cream in it, every State in the Union has established some sort of minimum butterfat requirement for ice cream.

The legal minima vary from 8 to 14 percent by weight. Above these minima, however, consumers depending upon their own preferences, can get varying amounts of butterfat in their ice cream. In Washington, D. C., for example, a spot check showed that the butterfat content in ice cream ranged all the way from 8 percent up to 28 percent.

Milk solids other than butterfat are usually not subject to regulations by themselves. Ordinarily where States take into account the milk solid content of ice cream they lump it with butterfat content and set a minimum for the total milk solid content. This, of course, includes the butterfat content. This minimum may vary from 18 percent all the way to 35 percent.

No laws specify the sugar content of ice cream. In practice, however, ice cream contains somewhere around 15 percent sugar.

Federal Government buying specifications on butterfat and sugar content make these requirements which ice creams must meet before the Government will buy them:

Plain Ice Creams: Not less than 12 percent by weight of butterfat; not less than 14 percent by weight of sugar.

Fruit, Nut, Chocolate, or Similar Ice Cream: Not less than 10 percent by weight of butterfat, provided the total weight of butterfat and added flavoring is not less than 14 percent by weight of sugar.

French Ice Creams, Frozen Custards: Not less than 14 percent by weight of butterfat; must contain eggs; may contain starch or flour; not less than 14 percent by weight of sugar.

Air, offhand, will start no bubbles rising in the mind of a consumer intent on ice cream. But air is to ice cream what water is to milk. A certain amount of water in milk, or a certain amount of air in ice cream is inevitable.

The whipping and freezing which gives ice cream its creaminess, automatically puts air in it. Thus an ice cream manufacturer may start out with 1 gallon of ice cream ingredients and end with 2 gallons of ice cream. The additional gallon of ice cream is air. Technically it is called "overrun."

In the case where a gallon of ice cream ingredients is whipped up to 2 gallons of ice cream the overrun is 100 percent. But overrun can amount to much more or much less than this. Experts think that 100 percent overrun, which means 50 percent air, is a fair amount of air.

The Federal Government, when it is buying ice cream, doesn't like to pay for air in excess of 100 percent overrun. So when it orders ice cream it says to manufacturers in its specifications, "See to it that each gallon of ice cream weighs $4\frac{1}{2}$ pounds."

Consumers, too, can use this test. If they follow it they should demand that ice cream weigh at least 1 pound 2 ounces per quart or 9 ounces per pint.

Some States, and occasionally some cities, have taken action to keep ice cream air pressure down. Georgia, Kansas, and Pennsylvania require ice cream to weigh 4.75 pounds per gallon. Since ice cream mix ordinarily weighs about 9.2 pounds to a gallon, this permits ice cream manufacturers to get slightly less than 100 percent overrun, or to put it in terms of what consumers get: to put up ice cream that is half food and half air.

Illinois simply limits the overrun to 100 percent.

Connecticut and Idaho have gone at this problem differently. They insist that the food solids in ice cream weigh at least 1.6 pounds per gallon. Since the weight of food solids in ice cream ranges from 36 to 40 percent of the total weight this establishes a minimum figure of about 4.25 pounds per gallon for ice cream.

Still another way of keeping excessive air out of ice cream is used in Chicago where the melted volume of ice cream must be at least 50 percent of the volume as sold.

Question 4 in the ice cream quiz is familiar enough to quizzical consumers. It is simply the old "Watch Your Weights and Measures" admonition applied to ice cream.

Consumers know well enough that chickens stuffed with lead are not the rule when they buy chickens, and that 14-ounce pound loaves of bread are exceptions. But they also know that there are enough chislers to make it worthwhile keeping an eye open. And from their experience with can sizes

that look alike but contain different amounts of food, they know that careless commercial practices sometimes lead to consumer deception when there may be no desire at all to cheat.

Speaking to a group of ice cream manufacturers in New York, for example, a Weights and Measures official noted that the ice cream industry generally was clean both in its manufacturing processes and in its commercial practices. But, he continued, he had noticed the infiltration of some commercial practices into the ice cream industry which he deplored. So he asked the ice cream manufacturers to cooperate with him to stamp them out.

The use of deceptive containers was one practice he called attention to.

A Brooklyn, N. Y., ice cream company had a call from the Weights and Measures Bureau because it put up 4 fluid ounces of ice cream in a package that looked as if it contained 8 fluid ounces. At first this package had an upper compartment, which contained a toy or metal trinket. When the Health Authorities clamped down because the trinket might have contaminated the ice cream, the company tried putting a paper napkin and a wooden spoon in the compartment to see if that wouldn't get by. Id didn't. The Weights and Measures Bureau ruled that the package misled purchasers, particularly the children who bought most of this particular ice cream. It stopped the practice.

Another practice the Weights and Measures official objected to was the use of off-size containers. So far as ice cream is concerned this takes the form of a "quart" package of ice cream containing only 4/5 of a quart of ice cream.

Not even the ice cream retailers realize in this case that they are short-weighting their customers. They are asked for a quart of ice cream and they hand over the "quart" package. To give the practice a semblance of legality, manufacturers guilty of this practice make a point of printing the correct weight of the package on the label. That, of course, is another argument for reading the label, even of ice cream.

What alarmed the Weights and Measures official about this practice was not only the fact that it is unfair to the unsuspecting consumers who don't read labels, but that is an abuse which becomes progressively worse. Competition, he said, will gradually result in a smaller and smaller "quart" package until consumers are forced to step in and take a hand themselves. Already a 17½-ounce quart has been seen (there are 32 fluid ounces in a quart).

The kind of action consumers will insist on, Weights and Measures experts say, will be a demand that ice cream be sold by the pound. Right now, however, Weights and Measures officials oppose the ice cream by weight scheme because it differs radically from present selling methods. To sell ice cream by the pound would mean that every little ice cream parlor and every drug store would have to buy scales.

Massachussets has exorcised this ice cream evil, however. It has passed a law which requires ice cream to come in packages that are either 1 quart, 1 pint, ½ pint, or 1 gill in size. As a further insurance against ice cream clippers, the law provides that the State Director of the Weights and Measures Bureau may require standard shapes and dimensions.

On the subject of packages of ice cream, ice cream that is packed in a store while you watch the druggist scoop it out of the freezer, contains less air than ice cream which is packed at the ice cream factory. The scooping and packing by the druggist where it is packed tight, as it should be, forces the air out. For this reason ice cream costs more in bulk. But it is more ice cream.

Asking ice cream questions, it is plain, carries consumers back to an examination of their ice cream ordinances. When they get to the point where they are considering introducing an ordinance into their city, or bringing an old ordinance up-to-date, there are some provisions to be wary of. They are the kind that interfere with the sale of ice cream without adding anything to the purity or quality of ice cream.

There are, for example, regulations whose only effect is that of a tariff. They bar ice cream made outside of a city from coming into the city, for no reason connected with the public health, but to protect local interests. The result of such regulations is to increase the price of ice cream to consumers without assuring them of better or purer ice cream.

Another kind of regulation, for which consumers should keep an eye open, is one which discriminates in favor of one group of ice cream manufacturers to the detriment of another group of manufacturers. Some ice cream ordinances specify construction or handling details so that small manufacturers would be barred from the ice cream business.

Ice cream ordinances can be written and enforced so that consumers, producers, and distributors are all given adequate protection without penalizing anyone unfairly.

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UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMERS' COUNSEL DIVISION
WASHINGTON, D. C.

INSIDE THE COFFEE CUP

The Food and Drug Administration stands guard at American ports of entry to protect America's coffee cup from adulterated coffee

Tea has an honored place in American history but coffee played a role, too, in the founding of the United States. In the year 1774 a group of patriots in New York City, members of the Committee of Correspondence, gathered in the Merchants Coffee House, a block from the docks where the high-decked, tall-masted merchant vessels lay at anchor in the harbor, and drafted a letter to a group of Boston patriots in which a union of the American colonies was proposed.

Fifteen years later the Merchants Coffee House was decked out in flags. Down the street the harbor was filled with small boats flying the bright new flag of the United States. Inside the coffee house a group of solemn men, some of whom had helped draft the letter back in 1774, arranged themselves formally in anticipation of the moment when General George Washington would ride up to the coffee house, and step down to hear the official greeting which awaited him as President-elect of the United States of America.

Coffee is historic, you might say, and the historic dates have a curiosity value. First mentioned in literature sometime around the year 900 by an Arabian physician, coffee, according to legend, was first used as a beverage in 1258

Not until 1625 did it become known that sugar has its merits in a cup of coffee. Then in 1660, the Dutch ambassador to China ingeniously thought of adding milk to his sweetened coffee.

An American scientist, Count Rumford (Benjamin Thompson), invented the percolator in 1806.

For Americans, perhaps the most important other date in coffee history is 1906, the year the Federal Food and Drugs Act was passed.

Long before this Act was passed, some ingenious sharper first discovered that coffee could be adulterated with chicory. Chicory has its partisans. There are many people who believe that chicory added to coffee improves its flavor. There are others who prefer chicory to coffee. Concerned less about flavor and more about the profits to be clipped by adulterating coffee with chicory, some dealers before the passage of the Food and Drugs Act in 1906 mixed the 2 and sold the mixture with no mention of the chicory content.

Nor was chicory all. A New York newspaper in 1890 estimated that between 96 and 120 million pounds of bogus coffee were sold each year in the United States at an annual profit of 18 million dollars to the sophisticators. One factory produced an imiation coffee from rye flour, glucose, and water. The most successful imitation coffee factory produced 10,000 pounds of pseudo-coffee a week.

In the United States, January 1, 1907, marked a New Year and a new deal for the coffee consumer. On that day the Federal Food and Drugs Act took effect and the result was quickly apparent in the Nation's coffee cup.

Coffee substitutes could still be sold after the law was passed (and can be sold today), but after the food and drugs law began to operate they had to be sold as coffee substitutes and not as coffee.

The decisive role the Food and Drug Administration played is apparent in its rulings. An early ruling, for example, kept out of the United States coffee from Europe and other places which had been coated with lead chromate and similar poisonous chemicals ti improve its appearance.

It also became illegal to import into the United States blackjack coffee, that is, coffee of a very low grade with a large proportion of decomposed beans.

Any practice, in fact, which tended to make coffee appear to be better than it was, or which concealer inferiority, was put on a legal unfair list.

Finally, misrepresentation of the variety of coffee offered for sale was also forbidden.

Java and Mocha, for example, are highly venerated coffee names and before the Food and Drugs Act was passed almost anything that resembled coffee was called Java or Mocha coffee.

After the passage of the Act, Java coffee meant coffee which was grown on the Island of Java, while Mocha coffee meant coffee which was grown in the province of Yemen in Arabia.

One corner cutter, after this ruling, called a blend of coffee he sold, Javocha. When hailed into court he admitted that his coffee had never seen either Java or Arabia. Instead he explained to a skeptical judge and jury that Javocha was an acrostic which honestly and carefully told consumers where the coffees in the blend originated. JA, he said, stood for Jamaica; V for Venezuela; O for Columbia; CH for Chiapas, a State in Mexico; and A--here the acrostic broke down for A stood for Guatemala.

Prior to the passage of the Food, Drug, and Cosmetic Act of 1938, there was no definition of coffee in law, nor did the Food and Drug Administration have authority to establish one. As a basis for its proceedings against adulterated coffees, the Food and Drug Administration did issue a regulation which defined coffee, but this definition was only advisory and had no legal weight.

Under it the Food and Drug Administration announced that it regarded coffee as the "seed of the cultivated varieties of Coffea arabaica, Coffea liberica, and Coffea robusta."

Green coffee, it understood to be raw, unroasted coffee, while roasted coffee was considered properly cleaned, green coffee which "by the action of heat (roasting) has become brown and has developed its characteristic aroma."

Under the new Food, Drug, and Cosmetic Act of 1938, the Food and Drug Administration may promulgate a reasonable definition and standard of identity, a reasonable standard of quality, and/or reasonable standards of fill of container which do have the force of law.

The staff of the Food and Drug Administration is limited, however, and the number of food products are many, so that to date the Food and Drug Administration has not got around to fixing standards for coffee, though, in due time, it probably will.

While the Food and Drug Administration has established no minimum quality standards for coffee, as part of its routine activities it keeps an eye on all coffee imports.

Coffee, after it is imported, also remains under the surveillance of the Food and Drug Administration so long as it remains in interstate commerce.

Recently an inspector in New York City, making his rounds through one of the fragrant warehouses in the spice and coffee district, encountered 100 bags of coffee which contained what the Food and Drug Administration called an excessive number of worthless beans. On information supplied by the Food and Drug Administration, the Federal district court ordered this coffee held for trial. At the trial the owner of the coffee turned up and admitted the coffee was below par. The court then ruled that he could have his coffee back provided he sieved out the bad beans and destroyed them. Pending the destruction of the inferior coffee, the importer posted a bond.

Two billion pounds of coffee each year are tablespooned into America's coffee cup--so aromatic in the morning. More than half these 2 billion pounds of coffee are hauled down the sides of the great Brazilian plateau to the ports for shipment to American cities. From April to August, men and women slowly work their way from coffee shrub to coffee shrub, gathering the ripe red coffee cherries in sacks or baskets or pails. The coffee cherries grow in clusters around the base of the stems of bright green, oval leaves on shrubs which range from man-height to three times the height of a man. Like other tropical trees the coffee shrub bears flowers, green fruit, and ripe fruit all at the same time. During picking season only a few of the honeysuckle-like white flowers remain; enough, however, to fill the dry plateau air with a faint jasmine scent.

After the coffee is gathered, the red skin of the coffee cherry is removed along with a fruity pulp and a silvery parchment to disclose two green coffee beans. These beans, polished, sorted by sizes, and sacked, are the coffee of commerce.

In the United States the coffee is poured out of its sacks into other sorting machines where further sizing takes place, and then by suction it is carried along to a milling machine which cleans it. Some time later different varieties of coffee are blended together by dealers' formulas, and then the coffee is roasted in perforated cylinders which rotate before a furnace giving off a steady heat. This is the brown, genial Humpty-Dumpty looking coffee bean consumers know.

Coffee isn't bought for its food value. Before the ancient Arabians discovered that a stimulating flavorful drink could be made out of it, they ground it up, rolled grease into it, and ate it. That way it was a food. Today, however, people look to fruits, vegetables, meats, fish, and dairy products for food, and know that coffee brew has no food value. Those who use cream and sugar in their coffee, of course, have added a little food value, mainly calories. But all that the coffee drinker asks of coffee is that it be stimulating, fragrant, and flavorful.

Roughly these virtues in a cup of coffee depend upon the variety of the coffee, the way it is roasted, its freshness, and the way it is made.

Of these four criteria, paramount factors are freshness and the method of preparation.

Coffee, by American usage, generally falls into two classifications: Brazilian coffee and mild coffee, the word mild here meaning not gentle or bland, but rather anything that isn't Brazilian. As a matter of import statistics, it means coffee from Colombia, El Salvador, Mexico, Guatemala, British East Africa, and Venezuela, the six next most important sources of America's coffee after Brazil. To a lesser degree it means coffee from the Dutch East Indies, Arabia, Puerto Rico, Hawaii, and most of the other regions that fall between the tropics of Capricorn and Cancer.

By flavor and savor, coffee divides again into four general classes: neutral, sweet, acidy, and bitter. Taking these tastes as compass points, brown Bogota coffee from Colombia, brown Santos from Brazil, and most of the East Indian coffees usually lie in the bitter region of the taste map.

The rich, heavy-bodied, fragrant Mocha coffee is the acidy arch-type, while Mexican, Costa Rican, and Guatemalan coffee fall in the same taste constellation.

The run-of-the-crop Brazils are neutral-flavored while the Brazilian red Santos, the Haitian, and Santo Domingo coffees are sweet.

As a matter of cup practice, however, coffee is not sold straight. Coffee blenders, men with sensitive palates and noses trained to detect subtle fragrances, take different varieties of coffee and combine them to get a flavor that more or less meets with consumer approval on different price levels.

Coffee distributors try successfully to keep the quality of their blends constant from year to year. By manipulating the kinds of coffee they use in their blends they can keep the final blend steady even when the supplies of a particular constituent of their blend fail.

Blend of coffee, however, is only one of the factors in an acceptable cup of coffee. A second factor, not necessarily second in importance any more than the blend is first in importance, is the roast.

Before roasting, coffee is simply a fibrous, almost flavorless, tough, indifferent kind of product with practically none of the virtues coffee connoisseurs hymn. It's the roasting that loads the bean with its fragrance, that makes the coffee district in a city aromatic, the people in the neighborhood nostalgic, and the bean crisp and brown. During the roasting the heat induces a series of wonderful changes in the chemistry, the color, the smell, and the size of the coffeebean. Smoke shimmers up from the roasting, the beans begin to swell and sweat oil, some of the caffeine in the beans is transformed into gas and driven off. Water is evaporated from the bean. Sugar in the bean caramelizes to give the bean its brown color. The caffeine, sugar, and the substances called caffeinic acids in the coffee blend together to form an oil which chemists, for lack of precise knowledge, dub caffeol, the source of the coffee fragrance. Corresponding to rare, medium, and well done in meat, the coffee roasts are light, cinnamon, medium, high, city, full city, French, and Italian, depending upon the length of the time the coffee is roasted, the temperature, and the degree to which the coffee is agitated.

Under-roasted coffee makes a flat brew, with a wry green flavor. Over-roasted coffee tastes burnt and bitter. Generally, the darker the roast, the less caffeine the coffee contains, and the more pungent the brew.

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The kind of roast you get depends upon where you live. Along the Atlantic seaboard a medium-colored roast is the rule. On the Pacific coast you're likely to get a light roast. In the South you'll probably get coffee roasted very dark.

Until coffee is roasted, aging actually improves most varieties. After roasting all coffees begin to deteriorate. The aroma and flavor of coffee are due, of course, to the compounds resulting from the roasting. After roasting and grinding, however, these volatile compounds dissipate themselves in gas. It has been estimated that after 2 weeks, for example, when exposed to the air half the strength of coffee evaporates.

Actually, in kitchens no one computes the age of the coffee, so once it is bought, the coffee that is served gets progressively worse until it is used up. On the other hand, if an attempt were made to maintain the flavor of the coffee by increasing the amount used, the caffeine content would rise as the dose increased because while the coffee flavor goes up in gas, the caffeine remains.

Senile coffee, that is ground coffee over 2 weeks old and exposed to the air, also has another disadvantage. After a while substances in the coffee begin to oxidize, producing an off flavor which, however, is not harmful.

Short of roasting and grinding coffee at home, there are a number of ways to win out against the hazard of stale coffee.

You can inquire around until you find a store that sells freshly roasted coffee. In that case, you don't have to insist on vacuum packing, but if you do that you should be sure not to buy more than 3 or 4 days' supply of coffee at the most. It may cost a little bit more to buy the smaller quantity but the cost per cup of coffee in the end will be less.

Theoretically, coffee kept in a cold place should grow stale slower than coffee kept in a warm place. Actually, no experiments have verified this theory. It isn't necessary, therefore, to keep coffee in the refrigerator, but it is not a good idea to keep coffee on the shelf above the stove where the container is likely to get heated.

Guiding principles in coffee making are few. First the coffee pot must be clean, immaculately clean, despite the labor-saving myth to the effect that rinsing is enough for a coffee pot. Second, measure the coffee and water carefully, and once you have found the combination which suits your palate, stick to it. Third, the coffee should not be boiled. Boiling drives off aroma and the flavor which are the fundamentals of coffee taste, and the longer coffee boils the more bitter and less fragrant it becomes. Properly made "boiled" coffee is really steeped, that is, the

boiling water is poured over the coffee and kept hot, but not by boiling, until the desired flavor is obtained.

Experts say the best way to make coffee is by the drip method, a method in which water that has been heated to the boiling point is poured or permitted to drip over finely ground coffee. Something else to recommend this method is the fact that it produces a better brew with less coffee.

CONSUMERS' GUIDE Separate No. 33-M

UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMERS' COUNSEL DIVISION
WASHINGTON, D. C.

WHAT'S IN AMERICA'S SUGAR BOWL

Millions of tons of sugar sweeten America's diet each year. Here we explore where it comes from and what it is.

Ring up your grocer some morning and ask him to send you five pounds of carbon, hydrogen, and oxygen atoms, well-mixed, and compounded into something edible and sweet. If he is as smart as you are in remembering your high school chemistry, this won't stump him in the least. Soon will come the delivery boy bearing a bag of sugar.

Give the order to some laboratory chemist, and you might get one of a hundred different products, all called some kind of sugar, but as different from each other as a file of fingerprints.

Sugars there are aplenty, thanks not only to nature, but also to the ingenuity of the men and women who work with test tubes. Sucrose that comes from cane and beets and from maple sap, everyone knows. Dextrose from corn starch is becoming increasingly familiar. But other foods can be made to yield their sugars, too. From milk comes lactose. From various types of berries comes mannose. From starchy cereals comes maltose. Scores of other sugars are beguiled from their hiding places by the laboratory G-men -- all of them with different chemical make-ups, and different chemical properties.

To the scientist sugar is so many atoms of carbon, hydrogen, and oxygen built into a definite structure. Nature takes these atoms, shuffles and reshuffles them, and with the help of sun, wind and rain, makes sugar.

What man has learned to do is not only to extract sugar from the plants where nature has hidden it, but also to improve on nature by increasing the percentage of sugar found in the beet and in other sugar sources. Furthermore, men have learned how to split one sugar into two.

This they have done, for example, with sucrose. Sucrose is a sugar with a dual personality. Given the time, the place, and the right conditions, it can be divided into 2 separate and distinct sugars chemically different from each other.

One of the simple sugars that can be derived from sucrose is dextrose. The other is a sugar whose chemical name is levulose, sometimes known as fructose.

Separating this dual personality sugar into its 2 parts is done in the laboratory by boiling sucrose in a very weak acid. When the body ingests sucrose, it performs a process similar to what the chemist does in a laboratory. No sooner does sucrose go down the alimentary canal, than waiting enzymes get to work on it to begin the splitting process. This continues throughout digestion, which results in a cleavage into dextrose and levulose. These sugars are carried to the liver, but what happens next is a matter on which experts do not agree. The most generally recognized fact is that the sugars are stored in the liver as glycogen, to be used as needed by the body for energy. The story is the same for the simple sugar, dextrose, which also is transformed into glycogen and stored in the liver.

No matter how far back you explore into the genealogy of the sugar family, sugar cane appears to be the patriarch of them all. Its use is as primeval as the African bush, and as modern as television. It gets recognition in the Old Testament. There is an ancient Indian legend concerning its origin. The Crusaders are credited with bringing it back with them from their travels. Today it is cultivated for its sweet juice in primitive Melanesia and in many other parts of the world, while in other places a great industry has been built up in its name.

Not so ancient but almost as glamorous is the history of the sugar beet. When Napoleon had embarked on his wars of conquest, French ports were cut off from their tropical sources of cane sugar. Frantic French scientists probed for substitutes in apples, pears, plums, quinces, walnuts, and chestnuts. Their luck was poor until one Benjamin Delessert -- following upon previous experiments of 2 Germans, Marggraf and Achard -- investigated the beet, and from it produced crystallized sugar. To Delessert went Napoleon's Cross of Honor.

That was more than a century ago. Since then the sugar beet has lived a life divided between laboratory, field, and factory. Scientists have increased from 5 to 20 percent its sugar content, perfected the process of extracting sucrose from it, and the sugar beet industry has grown into great corporate magnitude. After a few false starts, the industry, under Government protection, took hold in the United States, and today about seventy thousand American farms look to the sugar beet as a profitable crop.

A post-war baby in the sugar family but no longer in the wobbly stage, dextrose is younger by far than sucrose. It was not until the 20's that researchers in the National Bureau of Standards, in cooperation with chemists in private laboratories, succeeded in making refined crystallized dextrose from corn. There followed several years of perfection of the process. Only in recent years has the industry begun to market refined dextrose in large quantities.

Some researchers hope that corn sugar — today not a top product in the whole corn industry — may some day work itself up to be one of corn's major byproducts. Its entrance on the sugar scene is recent, and dextrose manufacturers have refrained from making their production figures public. Outsiders guess that between 200 and 250 million pounds of dextrose flow out of corn sugar refineries each year.

(The Census of Manufactures reports the production of 234,000 tons of corn sugar in 1937, but this includes dextrose in its unrefined state as well as the refined product.)

Corn is the principal commercial source for dextrose in this country, but it can be made in the laboratory from any plant containing starch. In some countries abroad, dextrose is manufactured from potatoes.

Although long used for special dietary purposes and as an infant food, refined corn sugar -- or dextrose -- today is used mostly in the manufacture of food products, such as canning, baking, and candy making. Very often dextrose and sucrose are combined.

Experts on sugar seem to agree that dextrose is less sweet than sucrose, but how much difference in sweetness there is between them is not agreed upon.

Mention glucose to the ordinary consumer and he will probably think of corn syrup. Chemists in the laboratory, however, use the word glucose as merely another name for dextrose.

Sugar that consumers use to sweeten their coffee or tea and for other table use is today most often refined cane sugar or refined beet sugar or just plain "sugar," as you would call it over the breakfast table. And, of course, cane and beet sugar have long been mainstays, too, in making ice cream, bakery products, beverages, candy, dairy products, confectionery, flavoring extracts and syrups, and so on.

Into the Nation's sugar bowl last year poured more than 6 million tons of refined cane and beet sugar. Some of these tons were routed to consumer kitchens. A smaller part went into candy factories, bakeries, ice cream plants, and other places that make sweets and even medicines. Still other tons were held in warehouses to be marketed later.

From our island possessions of Puerto Rico and the Virgin Islands, from the Territory of Hawaii, and from the Philippines came enough cane sugar to fill the sugar bowl four-tenths full.

Cuba added another three-tenths, while other foreign countries added a nominal amount.

Cane sugar produced in Florida and Louisiana raised the contents of the sugar bowl to the three-quarter mark.

Sugar from beets grown in 22 States from Ohio west to the Pacific coast brought the level to the top of the bowl.

Congress for 6 years has declared how the national sugar bowl was to be filled with cane and beet sugars. It has told the Secretary of Agriculture what share of the bowl was to be allotted to American sugar growers, and what share to producers abroad. And it has ordered the Secretary to decide how much sugar was to be poured into the bowl each year.

By such action, Congress wanted to do 2 things. First, it wanted to maintain sugar prices at equitable levels and barricade them against too sudden ups and downs. And, second, it wanted to be sure that American sugar growers were getting a fair share of consumers' sugar dollars.

Under the present law, the Secretary of Agriculture in December of each year decided what the size of the sugar bowl was to be in the following year. He did this by checking on supplies, by measuring prospective consumer demand for sugar, and by doing other things which Congress said should be done before any sugar quotas may be announced.

Today parts of this law are suspended. They are suspended because an emergency situation in sugar developed. Newspaper readers know partly why this happened. In the early part of September, when the overseas cables brought the news of another European war, sugar also jumped into the headlines. Housewives, remembering their experiences after the last World War, became unnecessarily alarmed that a sugar shortage was imminent. They bought far more than their normal purchases. As a result some temporary shortages occurred. At the same time a great deal of speculative activity was present in the raw sugar market, and prices advanced rapidly. On September 11, the President by executive order, removed the quota barriers. In effect, he told producers in mainland United States, in Hawaii, in Puerto Rico, and in the Virgin Islands that they were free to send as much sugar to our consumer markets as they desired. Producers in Cuba and in other foreign areas were also free to send in as much sugar as they wanted to so long as they paid duties imposed on foreign sugar imports. That apparently served to reassure alarmed consumers. Since then raw sugar prices have dropped nearly to pre-war levels, but prices consumers pay for sugar had not moved back to the same extent when this was written.

Getting the cane and beet to give up their store of sucrose, and manufacturing dextrose from the corn kernel are complicated tricks. Corralling the sugar is only half the job; it takes a chemist's ingenuity and a technician's skill to refine the raw product to pure sucrose or dextrose, as the case may be.

Sugar cane juice goes through 2 separate processes before it becomes crystallized sugar. Cane stalks are first run between

tremendous crushers and ground into a mass of pulp. The juice, obtained from this process of crushing, is heated, passed through a series of settling tanks to remove impurities, then dispatched to vacuum evaporators to be concentrated into a thick brown syrup, about one-third moisture. Then comes another session in vacuum pans, and the syrup is dumped into whirling centrifugal machines which separate the raw brown sugar from the molasses byproduct. That ends chapter one in the life of a pound of cane sugar.

Chapter 2 begins in the refinery which cleans the sugar, makes it white, and leaves a product almost 100 percent pure sucrose. The raw sugar is "washed" with a fine spray of water under pressure, then melted by adding hot water. The resulting liquor goes through a series of tanks for further cleaning and through filters to remove impurities. The liquor, now purified, is reconverted into crystal form, put through another treatment in centrifugal machines, and finally dried and graded according to the size of the crystals.

Beets go through a somewhat similar processing before the final yield of pure white sucrose is surrendered. The beets are washed and scrubbed. Then follows a precipitate trip to the slicer, where they exit looking like so many "shoestring" potatoes. Now comes another bath in a diffusion tank where hot water soaks the sugar from the beets, forming a juice which is carried along into a purifying tank, while what is left by the beets is side-tracked as a useful byproduct for feeding animals. A purification process follows and the cleansed juice goes into a filter press, then into a series of evaporators which reduce the thin juice to a thick syrup -- now 55 percent pure sugar. The clear, sparkling liquor is channeled into a vacuum pan where the liquid is boiled to sugar crystals. From here, it goes into centrifugal machines which separate the almost-pure sucrose from the syrup, and after a drying and grading process, the sugar is ready for shipment.

Manufacturing the dextrose from the corn kernel requires all of a chemist's resources and skill. Before anything can be done, the kernel germ and endosperm must come to the parting of the ways. This is accomplished by a process of soaking and rupturing the kernel. With the germ removed, the remainder of the kernel is ground between millstones, and the starch and gluten separated from the fiber and hull of the kernel. Another process separates the starch and the first victory toward capturing the pure dextrose is chalked up.

Now begins a bit of mechanical digestion -- pulling the starch through a process broadly similar to the transformation it gets in the human digestive system. It is pumped into big tanks, and soaked in dilute hydrochloric acid, under pressure and at a set temperature. A liquor then emerges. When refined, filtered, and evaporated this is corn syrup. A short period more of this treatment and you have corn sugar 70 to 80 percent pure dextrose. These are at best only the rank and file corn sugars. To get the almost pure dextrose, corn syrup must be filtered and

evaporated, then crystallized. After several days of crystallizing, into the centrifugals it goes, just as the syrup from cane and beets goes into the whirling tanks to divide the molasses from the crystals. In practically no time, the 2-mile-a-minute centrifugals get rid of the corn "molasses" and leave a white refined corn sugar from 99.5 to 99.8 percent pure dextrose ready for whatever use to which it is to be put. Refined corn sugar is also sold in a hydrated form containing about 9 percent water.

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UNITED STATES DEPARTMENT OF AGRICULTURE
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STANDARDIZING STANDARDS

When measurements of quantity and quality vary from State to State, standards need standardizing. Here's how unstandardized standards slow up trade and help to boost costs.

When is a standard not a standard? The answer is: "When it's one of 48 State standards, many of which are different." Then it's a trade barrier. And it is a Grade A nuisance, to boot, when, in addition to being different from State to State, it is enforced with a disregard for the convenience of interstate traders.

September 17, 1787, was the day on which representatives of 12 of the 13 States (Rhode Island dissenting) put their signatures at the end of a newly drafted Constitution. In the Constitution they gave a newly created Congress power to act on a grievance which annoyed them as much as it does us--the lack of a single standard of weights and measures throughout the United States. Since then the standards problem has been aggravated by the creation of different standards in the different States. This is true not only of weights and measures but also of containers, grades, and a host of other measures of one kind or another.

Despite its power to act, the Nation as a whole has done little about the problem. So far as fruits and vegetables are concerned, there are 4 laws which together touch on the problem. There are a Federal Standard Barrel Act, 2 Standard Container Acts, and a clause in the Tariff Act which establishes 50 pounds as the legal weight for a bushel of apples for tariff purposes. Together they fix standards for barrels, berry boxes and baskets, for hampers, round stave baskets, market baskets, and for a bushel of apples. They do not do anything for crates and boxes. Nor do they establish standard weights for bushels, or any of the other units of weight or measure.

Besides these weights and measures laws there are Federal laws which provide for U. S. grades and their compulsory use for wheat, cotton, and butter under certain conditions.

But it is not so much what the Federal Government has not done as it is what the States have done, that makes a bewildering problem of nonconformity. This is brought out in the special report of the Bureau of Agricultural Economics to the Secretary of Agriculture on "Barriers to Internal Trade in Farm Products."

Sweetpotatoes, legally, weigh 60 pounds to the bushel in one State, 56 pounds in 5 States, 55 pounds in 5 other States, 54 pounds in 10 States, 50 pounds in 14 States, and 46 pounds in one State.

Cantaloups may come in halves filled with ice cream at the end of a dinner, but when they start on their way to consumers they travel in "standard" cantaloup crates--or rather in crates that have been standardized into distinctly different shapes and sizes by 15 different State laws. Five of these State laws apply standards for cantaloup crates according to the inside dimensions; others define standards according to the outside dimensions. Apple boxes have been "standardized" into a Babel of diversity by 7 different laws.

Most of these standards are voluntary and are intended only for shipments out of a State and not for application at the receiving end of the fruit and vegetable haul.

Not so long ago, however, Oregon made its berry box standards compulsory on all berries shipped out of the State. At the same time California enforced its own different standard for boxes containing berries coming into the State. Oregon farmers and shippers who sold their berries in California were caught between the devil and the deep blue sea.

Another container problem is packed full of potentialities for trouble. Utah and Montana demand that all fruits and vegetables be shipped in new, clean containers. Arizona says they must be packed in new or clean containers if they come with an inspection certificate. To make the law even more stringent, Montana has ruled that boxes which have been used during the picking of fruits and vegetables are not new containers.

Breaking an old farm habit of using baskets, crates, and boxes over and over again, these laws make trouble for farmers, and add to the cost of marketing. Based partly on the belief that there is danger in spreading plant diseases from the use of used containers, the laws have been passed despite the fact that experts have not made up their minds on this problem yet.

Many producers and consumers now recognize that quality as well as quantity must be measured in order to buy intelligently. Just as with quantity standards, when quality standards vary from State to State, confusion sets in.

Montana requires all produce sold within its borders to bear grades and labels that meet Montana's specifications. These grades and labels are based on Federal standards but they have several requirements of their own.

An official in a neighboring State says, "On commodities such as peaches and cantaloups which are marked according to (our standards) in this State, they (Montana) insist that the grades be marked according to their standards. This, of course, requires a duplication of the marking and causes considerable confusion to truckers hauling into (Montana)."

Consumers, as well as producers, of course, pay the costs of confusion. "It is my understanding," another State official says, "that when a load of fruits or vegetables arrives at the Montana State line, even though they carry the inspection certificates of (our) State, issued under our joint Federal and State setup, they must again be reinspected . . . (and) another charge made for the inspection by the Montana people."

California has established minimum standards for 30 different fruits and vegetables. No fruits and vegetables, from California or from other States, may be sold in the State if they do not come up to these minimum standards.

When minimum standards are fixed at reasonable levels, and usually they are, they protect consumers from inferior and unwholesome products, and they protect the producers of wholesome quality products from unfair competition with inferior products. When fixed at unreasonably high levels, however, minimum standards may reduce the supplies of good wholesome foods to consumers.

Sometimes States take in their welcome mats altogether. Michigan locks and bars its door to cull potatoes, the very lowest grade, if they are to be sold for table use. Colorado rejects all eggs which grade as low as U. S. Trade. State inspectors meet all trucks carrying fruits and vegetables into Utah; any product which falls into the cull class is rejected. An inspection fee ranging from 50 cents to $4 is exacted from each trucker, whether his cargo is admitted or not.

Sometimes States frankly draw up their grade requirements to encourage the sale of their own products and to discourage the sale of out-of-State products.

Rhode Island, for instance, has 3 egg grades--Rhode Island Special, fresh eggs, and eggs that are not fresh. "Consumers desiring the very best egg obtainable," the Rhode Island Bureau of Markets explains, "should demand a 'Rhode Island Special!' This is the highest grade of egg sold in Rhode Island. 'Rhode Island Specials' must be produced in Rhode Island."

Without tampering with grade requirements, some States encourage their citizens to give preference to State-grown products by requiring labels which identify out-of-State products. North Carolina, South Carolina, and Florida require eggs that come from outside the State to be labeled "shipped." Georgia and Montana require eggs to be labeled with the name of the State to be labeled with the name of the State in which they were

were produced. In North Carolina, South Carolina, and Florida, too, locally produced eggs are labeled as a State product.

Grade requirements that give advantages to State-grown products sometimes are followed by State-sponsored advertisements of the home product.

State advertising has not proved an unmitigated benefit to consumers. When designed to encourage the consumption of locally grown products, as against out-of-State products, State advertisements can act like a tariff, discouraging consumers from buying out-of-State products even though they may be equal in value to locally produced foods. "Eat Michigan apples. They're best," that State tells its citizens. "New Jersey has finer eggs," affirms that Commonwealth.

"There is," the Report to the Secretary of Agriculture warns further, "a real possibility that the various States will adopt the view that advertising by other States jeopardizes their markets. In fact, just such a fear is expressed in the introductory section of the Idaho law that provides for State advertising."

Such an attitude obviously can lead to competitive advertising budgets and the development of un-American tensions and rivalries between States.

Even where advertising is within the legal power of a State, the Report to the Secretary says, "each State has the responsibility of avoiding a action that . . . would be directly or indorectly restrictive of interstate trade."

This story opened with a riddle. Farmers, distributors, and consumers still have the same riddle to answer which the Founding Fathers thought they had answered by establishing a more perfect union.

The 13 Colonies were threatening to become 13 little countries when the Constitution was written. Different kinds of money, different laws, different weights and measures standards, tariffs, blocked the way to progress and prosperity.

Today walls between the States are being bricked up again with different bricks. And as they go up, prices go up with them, and farmers' returns and wages go down. Anything which Balkanizes America tends to Balkanize the American standard of living.

Now the general answer to most of these problems is indicated in the Special Report to the Secretary of Agriculture. States must assume the responsibility of subordinating their "Individual welfare to the general welfare of the United States."

For specific recommendations it is necessary to look at the history of grades. When grades were first promulgated, "they were little more than part of the advertising of the organization or district which then issued them . . . Local pride said: 'We will never suffer our unparalleled fruit to be packed and sold on any such low standards as must be set to meet the needs of the growers in yonder Valley over the Divide, where they have multitudes of pests which to us are happily unknown.'"

But while the people in Happy Valley may have wanted a grade designation which would truly bespeak the virtues of Happy Valley fruits, buyers and sellers wanted grades that would speak in a language that could be understood in every market in the country. When counters between buyers and sellers became 3,000 miles wide, it became necessary to speak a language that could be understood 3,000 miles away. Uniform grades and standards provide that language.

The War accelerated the adoption of national standards. But post-war competition between the States threatens to reduce the common language to a confusion of tongues.

What is needed specifically, the Report to the Secretary indicates, is action by the Federal Government under the powers given it by the weights and measures clause in the Constitution, and cooperation between the States and the Federal Government to achieve uniformity in grades, labeling, and standards.

Grades should be extended to more commodities.

Where private brands are used by canners and meat packers to connote quality (and they are universally) an attempt should be made to bring order out of that confusion by the introduction of simple uniform grades.

Grades are expressed in too many different ways; consumers, too, should be able to understand them. Some retail grades are expressed in letters, A, B, or C; some have names, Choice, Extra, Prime; and still others are designated numerically, like 92 score. Instead of all this, the Report suggests, one simple set of grade designations should be adopted. Milk, for example, could stand a uniform grade.

Finally Federal and State grades should be studied to see if they keep pace with consumer tastes, and with scientific knowledge. Nor should they smell too much of the laboratory and the study. "In the past Federal and State grades have been criticized on the grounds that they have been written mainly by technical commodity experts without enough consultation with general economists, nutrition experts, and others." The others, of course, are consumers, and farmers, and the trade.

Containers for fruits and vegetables, a new publication of the Bureau of Agricultural Economics, is just off the press. It includes a digest of Federal laws dealing with fruit and vegetable packages, and reviews the containers used in important shipping regions for the major kinds of these foods. It is Farmers' Bulletin 1821.

Copies can be obtained free, as long as the supply lasts, from the Department of Agriculture, Washington, D. C.

CONSUMERS' GUIDE Separate No. 35-M

UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMERS' COUNSEL DIVISION
WASHINGTON, D. C.

MARGARINE TAKES THE HURDLES

State and Federal laws raise economic barriers along the route from factory to dinner table for this low-cost bread spread*

Napoleon III, disturbed because his subjects were staying up after dark, and because they were riding trains, ordered his Minister of State to offer a large cash prize to the man who could invent a cheap butter substitute.

Not so illogical as it sounds, the offer was made to encourage the invention of an edible fat which would make up for the edible fats and oils the French were burning in their lamps after dark and using to lubricate the wheels and axles of their growing railroad industry.

Demand for night illumination and for lubricating oils in industry had reduced the supply of edible fats and oils. Butter, almost alone, had to meet France's need for fat as food. Butter prices, under the stimulus of increased demand, however, were leaping out of reach of most Frenchmen.

Since fats are an indispensable part of the human diet, Napoleon III was faced with a crisis. A French chemist named Mege-Mouriez, building on the research of other chemists, answered Napoleon III's prayer. The Cheap edible fat he invented was called margarine.

Mege-Mouriez's achievement came to light in 1869 when he was awarded an English patent on his method of making margarine. By 1874 margarine was in production in France. On April 12, 1874, a city ordinance announced that it was legal to sell margarine in Paris, provided it was not sold as butter.

*This is the fifth of a series of Consumers' Guide articles based upon material contained in the publication, "Barriers to Internal Trade in Farm Products," a Special Report recently made to the Secretary of Agriculture by the Bureau of Agricultural Economics. Earlier chapters appeared in the March 13, March 27, May1, and May 15 issues of the Consumers Guide. A few free copies of the complete report may be had by writing to the Bureau of Agricultural Economics, U.S. Department of Agriculture, Washington, D. C.

Within a few years it was being made in England, Germany, and the United States. Napoleon III and Mege-Mouriez had started something.

Margarine is a product which is processed in factories but whose antecedents are chiefly farm products. The 385 million pounds of margarine produced in the United States last year had a value, at retail prices of 66 million dollars. To feed this 66 million dollar industry, margarine makers used 20 million pounds of animal fats which were by-products of the cattle and hogs that packers bought from American ranchers and farmers. An even more important American source of margarine ingredients is the cotton grower. From him come the cotton seeds from which are pressed oil that is eventually worked into margarine. Altogether, in 1938, there were used in the manufacture of margarine 143 million pounds of cottonseed oil, 40 million pounds of soybean oil (soybean oil moved ahead of cottonseed oil as a margarine ingredient in July 1939), 3½ million pounds of peanut oil, and a half million pounds of corn oil. To this were added 106 million pounds of imported fats and oils; cocoanut, palm sesame, rape, and ouri couri oils, exotic products of the Far East, the South Seas, and the tropics. These domestically produced and imported fats and oils, processed and churned, added up to the 3 pounds of margarine which the statistical "average person" in the United States consumed in 1938.

That's one side of the story. The other side of the story comes from the butter industry. In 1938 it produced more than 2 billion pounds of butter with a total retail value of some 800 million dollars. In the great midwestern region butter making is a major activity. And butter is a product of dairy farms located in every State in the Union. Some of these dairy farmers would like to limit, in one way or another, the sale of margarine since they say it competes unfairly with butter. Without measuring the competition, a comparison of butter consumption with margarine is in order. Against the 3-pound average per capita consumption of margarine in 1938, there was an average per capita consumption of 17 pounds of butter.

Margarine makers, and the people who raise the products which go into margarine, understandably enough, do not want the sale or consumption of margarine limited.

The Agricultural Adjustment Administration, without in any way taking up arms for or against either side, is administering a farm program which is designed to benefit all farmers concerned with producing the raw materials of both foods: producers of milk and butter, and producers of fats and oils; the cotton producers, the peanut growers, the corn producers, and the livestock producers.

Pressure in the States has tipped the scales, by means of laws, sometimes in the direction of one group of producers, and sometimes in another direction. Of the laws of this type, one group is called the "margarine laws."

A chapter in a recent special report to the Secretary of Agriculture on Barriers to Internal Trade in Farm Products describes margarine laws and their effects.

"Almost from the time of its introduction into this country in the early 1870's, Federal and State taxes and regulatory laws have, with varying success, been applied to the manufacture and sale of margarine (oleomargarine)," the chapter begins. "Irrespective of whether or not such was its purpose, the actual effect of much of this legislation has been to raise appreciable barriers to interstate trade in butter substitutes."

Sometimes there are perfectly good reasons, or at least reasons that most people accept as perfectly good, for a trade barrier. However, there are two questionable effects of some trade barriers. One is to deny consumers the opportunity to make choices when they go marketing. The other is to penalize certain producers in favor of other producers.

In the case of margarine, these laws raise the price of the product to consumers and place restrictions on the marketing of margarine ingredients by the farmers who produce them.

The Federal Government, it should be noted, places restrictions against the use of butter substitutes in its institutions. Soldiers in the United States Army may not be served these products except when they are cooked with food. This is true for war veterans getting care in Veterans' Hospitals and for patients in the hospitals operated by the Interior Department.

Tracking along after these Federal precedents, 20 States forbid, in one way or another, the use of oleomargarine in State-supported or State-aided charitable, penal, or other institutions.

Many States require restaurants and boarding houses serving oleomargarine to post conspicuous signs announcing that margarine is dished out to patrons. Missouri and Arkansas require them to label the plates containing it, "oleomargarine."

More than half the States have laws requiring margarine to be labeled and packaged so that it won't be confused with butter.

The sale of yellow margarine--colored like butter--is prohibited altogether in 32 States.

Every State in the Union except Arizona has special laws applying to margarine, in addition to the regulations which would ordinarily apply to it under the Food and Drug laws.

In addition to these laws, there are also the license and tax regulations which apply to margarine.

The manufacturer of margarine is taxed by the Federal Government for the privilege of making this commodity. His tax is $600 a year. For each pound of uncolored (that is, white) margarine he makes, he pays a tax of one-fourth of a cent. In addition, for each pound of yellow margarine he makes, he must pay a tax of 10 cents.

Wholesalers who sell margarine must pay the Federal Government a tax of $480 a year, for the privilege of dealing in yellow margarine.

Retailers who sell white, that is uncolored, margarine must pay an annual tax of $6 to the Federal Government. To sell white and yellow margarine they must pay a tax of $48 a year.

Two taxes must be paid on margarine that is imported into the United States. The first is the tariff duty which amounts to 14 cents a pound. Then, after its admission fee has been paid, there is a tax of 15 cents a pound for an internal revenue stamp which is affixed to each package of margarine sold in this country. Imports of margarine are practically nil.

In 11 States a manufacturer must have a State license as well as a Federal license to manufacture margarine. This license ranges in cost from $1 in Minnesota to $1,000 in Wisconsin, Oklahoma, and North Carolina.

Wholesalers of margarine must pay anywhere from$1 to $1,000 annually to the States in which they hope to sell this product.

Montana assesses retailers $400 a year for the privilege of selling margarine. Thirteen other States charge their retailers anywhere from $1 to $100 a year for the privilege of putting margarine into their customers' market baskets.

Six States track down boarding house and restaurant operators to tax them for the privilege of serving margarine. The taxes range from $2 to $25 a year.

Bakers in 3 States have to pay anywhere from $1 to $10 a year for mixing margarine into their batter.

Margarine also has produced something else by way of novelty: licensed consumers. Wisconsin, in perhaps the most searching margarine law of them all, hunts out consumers who buy margarine in interstate commerce, and taxes them $1 a year.

Those are the State taxes which corporations and individuals must pay for making, handling, selling, or using margarine.

In addition, half the States place excise taxes of one kind or another on margarine.

These taxes, depending upon the State, are intended to accomplish one of 4 purposes:

1. To protect butter from the competition of any kind of butter substitute.
2. To protect margarine made from fats and oils produced within that State from competition with margarines made from fats and oils produced in other States or abroad.
3. To protect margarine produced from American fats and oils from margarines made from foreign fats and oils.
4. To prevent disguising margarine as butter.

Taking up the cudgels for butter, Wisconsin and Washington put a tax of 15 cents a pound on all margarine sold within their borders. Altogether 9 States tax margarine without reference to what it is made of. In addition to Wisconsin and Washington, these States are Idaho, Iowa, Oklahoma, North and South Dakota, Utah, and Tennessee.

Three cattle-producing States, Wyoming, Missouri, and Nebraska, write their margarine tax laws so that margarine, to be sold inside their borders, must be made chiefly of animal fat.

Discriminating between domestic and foreign ingredients, 14 States tax margarine if it contains oils and fats of foreign origin, but make it tax-immune if it is made of any one of a list of oils or fats either made in the United States or made in the State concerned. Thus in 7 States margarine is tax-free if it contains minimum amounts of certain animal fats, neutral lard, corn oil, cottonseed oil, peanut oil, soybean oil, or milk fat.

First effects of the burst of important chemical inventions in the last century, which included margarine, were not entirely happy. "Chemical inventiveness outdistanced business ethics," one authority, basing his statement on studies made by the Department of Agriculture in the 1880's, puts it, "and many newly developed substitute articles were used for adulteration and sold as the genuine article. Milk, butter, cheese,flour, tea, coffee, honey, and olive oil make only a part of a long list of products adulterated at that time."

Margarine, colored yellow to resemble butter, was in the early years of its manufacture in the United States palmed off as butter.

That was fraud. This fraudulent sale of margarine as butter got mixed up in a political war that was waged in the 1880's. Resentment by farmers against the great packing companies of the day was high. Stewing in the political pot at the time were laws to regulate big corporations, laws to regulate the railroads, and laws which were meant to even up the struggle between farmers and city corporations, between small and big businesses.

Margarine, as a product manufactured by the great packing houses in a period when they were most unloved, started out with 2 strikes on it. The fact that it competed with butter, which at the time was made almost solely on a small scale by practically every American farmer, made things worse.

Laws fell thick and fast on margarine. Ostensibly their object was to make it impossible to sell margarine as butter. Hence the present day distinction in the tax laws between colored and uncolored margarine, with the heavier, prohibitive tax on the colored variety.

In two-thirds of the States today, there are laws which forbid the sale of colored margarine. But, where margarine is used in place of butter people want it to look like butter. So margarine makerssell, with their margarine, a little packet of coloring matter which the consumer himself can use to color the product. Here no one is being fooled.

The Federal Oleomargarine Act, passed in 1886, wasone of the first to offer consumers any protection against misbranding andadulteration of a food. Along with its tax regulations, the law forbade false and deceptive labels, made the sale of deleterious margarine illegal, and required all margarine to be labeled plainly with the name "Oleomargarine."

Today consumers rely chiefly on 2 Government agencies for protection against unwholesome or misbranded margarine. If it contains fats derived from meat animals margarine must be manufactured in plants supervised and inspected by the Federal Meat Inspection Service. This means that every ingredient has been inspected and that these margarines have been manufactured under the supervision of a Federal meat inspector. Labels on this type of margarine, too, must be O.K'd by the Meat Inspection Service before they may be used. Margarine prepared under the supervision of the Federal Meat Inspection Service may be recognized by its mark, "U.S. Inspected and Passed by the Department of Agriculture," which appeared on the container.

Margarines that do not contain fat from meat animals come under the provisions of the Federal Food, Drug, and Cosmetic Act.

Margarine, under regulations issued by both the Meat Inspection Service and the Food and Drug Administration, must contain at least 80 percent fat. This corresponds to the legal provision requiring that butter contain at least 80 percent butterfat.

Those are the Margarine laws. The purposes of margarine tax laws, however, go beyond the prevention of fraud. It isn't necessary to hunt far to find out what the additional purposes are. For example, says the Special Report to the Secretary of Agriculture: "When the Washington tax of 15 cents per pound was carried to the Supreme Court, the sponsors of the Act candidly stated their purpose was to help the butter industry..."

That's frank enough, and it raises clearly a number of questions, which, while they can't be settled without careful study by consumers and producers, nevertheless are worth looking into.

First, does a tax on a butter substitute actually help butter producers?
Second, should the States levy taxes which are in effect tariffs?
Third, is there any reason why people shouldn't eat margarine if they want to?

Question one is answered by the Special Report to the Secretary of Agriculture in this way: "State legislation regarding margarine cannot be expected to give appreciable aid to dairy farmers. In all probability, even national legislation of a prohibitive character would be of little help!!.The Agricultural Adjustment Administration says, "The Government never before has prohibited the use of any safe and noninjurious food product. Even if it should do so now, and if all consumption of oleomargarine were prohibited and persons formerly using margarine turned to butter, the maximum increase in the price of butter probably would be less than 2 cents a pound. And since many oleo users might not turn to butter the actual increase might be less than a cent a pound.'"

From 1921 to 1934 a pound of oleomargarine sold at retail for somewhere between 12 and 19 cents less than a pound of butter.

Now, observers say, many of the people who buy margarine buy it because it costs less than butter. Raise the price of margarine and only a few of these people will turn to butter. Instead they will turn to other fats, to lard, to cottonseed oil, and similar products for cooking purposes; and to jams, jellies, mayonnaise, and other foods as bread spreads.

Going on, the experts explain, butter prices cannot be raised by a law passed in a single State. Take margarine away from the people in Wisconsin (a dairy State where this has practically been accomplished) and this action cannot raise the price of butter one cent above the national price so long as there is interstate commerce in butter.

But even if such laws were effective in their purposes, the Special Report to the Secretary of Agriculture says, in effect, States might consider other effects which such laws may have. In 1935, Wisconsin passed its stringent margarine tax law. Immediately Alabama, whose cottonseed oil market was hit by the law, protested through its Governor. So did the Louisiana State Commissioner of Agriculture, and the Tennessee Federation of Labor, and the Arkansas State Legislature.

In a bitter retaliatory mood a newspaper speaking for a group of cotton growers said, "We are Wisconsin's best customers for butter, cheese, condensed milk, farm implements, farm light plants, plumbing supplies, and road-building machinery. Without our patronage she would indeed be in a sad plight.

She has invited such a calamity on herself. She has chosen to wall herself in. Let us see how she likes it."

Actually, the Report continues, no great counter measures were taken. But the law establishes a precedent, the Special Report points out. Other laws might very well be proposed that would do to butter in behalf of other products what Wisconsin is trying to do to margarine in behalf of butter. Already laws are in effect which try to block the sale of out-of-State products by laying State excise taxes on them.

Another sentiment, too, has been detected. California's citizens, in a State referendum, repealed an excise tax on margarine, and in Washington State a law discriminating against margarine was similarly repealed. In all, 9 prohibitive margarine laws have been repealed by State referenda.

And this year, the signs indicate a definite trend. Under the light of publicity on the effects of trade barriers, the legislatures of Oregon, Vermont, and Minnesota turned down a proposal to enact margarine taxes. Iowa voted "no" on a proposal to increase the present tax.

Every now and then in the margarine-butter controversy, the argument pops up: Well, people shouldn't eat margarine anyhow, it isn't healthy.

Margarine and butter are both predominantly fats. Under Federal laws butter must contain at least 80 percent butterfat, and under Federal regulations margarine must contain 80 percent fat.

Now fats are high-calorie foods which are important in the diet because they are a rich source of energy. They rank above any other kind of food in fuel or energy value. A pound of margarine, or butter, for example, furnishes about 3,400 calories.

For energy purposes, there is little to choose between the various kinds of pure fat. They are all, more or less, equally digestible, and equally rich in fuel value.

However, since neither butter nor margarine is all fat, there are difference between them.

Apart from the fact that people eat butter because they like it, its consistency is desirable as a bread spread. Further, butter contains 2 important vitamins, A and D. The amount of these vitamins in butter depends upon the diet of the cows that produced the milk from which the butter was made. Thus the Vitamin-A content of butter may range all the way from about 1,400 International Units per pound up to 27,000 International Units per pound. The Vitamin-D content of the butter depends upon how much sun and also on the kind of food the cows get.

Margarine's value as a source of vitamins depends upon its ingredients. Animal-fat margarines containing a substantial proportion of oleo oil may have some Vitamin-A value. Under a ruling of the Meat Inspection Service animal-fat margarines are not permitted to be fortified with vitamins.

Margarines churned in whole milk, whether made from animal or vegetable fats, have such Vitamin-A value as the milk contributes.

Vegetable oils used in margarine manufacture do not contain Vitamins A and D. However, manufacturers of some vegetable margarines fortify their products with vitamin concentrates.

A pound of the fortified margarine provides at least 7,500 International Units of Vitamin A, the amount in a pound of so-called "average" butter. Such margarine also contains some Vitamin D. To find out whether or not a margarine is fortified, read the label.

Obviously, if butter and margarine were the only sources of these vitamins, either butter or the fortified vegetable margarines would be essential in the diet.

Actually, however, no one expects either butter or margarine to meet his day's needs for Vitamins A and D.

Freedom from the ailments which come from deficiencies of these two vitamins cannot be assured whether you eat margarine or butter, or both. Your state of nutrition is determined by your entire diet. The best safeguard is a well-rounded diet.

CONSUMERS' GUIDE Separate No. 36-M

UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMERS' COUNSEL DIVISION
WASHINGTON, D. C.

SIMPLE AS A B C --

How quality grading of canned fruits and vegetables grew as a Government service and what yardsticks it provides for consumers.

"When I use a word," Humpty Dumpty said, in a rather scornful tone, "it means just what I choose it to mean -- neither more nor less."

"The question is," said Alice, "whether you can make words mean so many different things."

"Ah," smiled Humpty Dumpty, "you should buy a can of lima beans."

"Lima beans? My goodness, I was supposed to buy a can of lima beans. But where can I buy lima beans on this side of the Looking Glass?"

"Over there," Humpty Dumpty pointed, indicating a great blaze of neon lights.

"Thank you," Alice said, and she walked over to the store, nodding to the White Queen who was emerging with a market basket.

The store was as dazzling inside as it was out. There were black and white enameled panels everywhere, and not a speck of dust. Foods glowed under colored lights that brought out their most appetizing tints. Just waiting for a clerk, Alice became ravenously hungry.

Finally the clerk appeared.

"I want a can of lima beans," Alice said to the clerk.

"Yes, Madam," the clerk responded. "A can of select lima beans?"

"Select lima beans sounds fine," Alice nodded. "There are no lima beans choicer than select, are there?"

"Well," said the clerk, "we have superb lima beans."

"Pardon me," Alice stammered apologetically. "Superb lima beans would naturally be better than select lima beans. If I weren't so serious-minded I would say superb will suit me superbly. Since they are your best lima beans, give me some of them."

The clerk cut her off as if he were short of temper. Alice, his manner indicated, was acting stupidly. "Superb aren't necessarily our best lima beans at all. Of course we have select and superb lima beans, but then we have superior lima beans, and supreme lima beans, too."

"Oh, dear me," Alice cried, "I just can't get this straight. Superb, select, supreme, superior. They all seem to me like they must be the very best."

"Very best," the clerk interrupted. "We have them, too."

Alice suddenly reached into her purse for the piece of cake she always carried with her. Nibbling on it, she immediately became very small, small enough to disappear through a crack in the floor. And without any delay, that was what she did. It was all too confusing.

Consumers, no less than Alice, are bewildered by words whose meanings don't stay nailed down, particularly when the words are used on the labels of foods you can't see because they're wrapped up in a can.

But it was farmers, dealers, and bankers -- not consumers -- who were the first to run up banners in favor of words with meaning and against words without meaning.

When farmers sell their products, and dealers buy them, and bankers lend money on them (transactions which occur and have been occurring thousands of times each day for a long time), there are three questions which must be answered:

What's the price?

What's the quantity?

What's the quality?

Describing price is simple. That's done in dollars and cents. But the reason it is simple is because the Federal Government has defined the measurements and the terms which apply to prices in a national law; one hundred cents make one dollar.

Describing quantity is also relatively simple. State laws, and in some cases Federal laws, define the pounds, quarts, and bushels which are measures of quantity.

But a quarter of a century ago there were no generally accepted measures of quality. The rule of Humpty Dumpty prevailed on the farms and in the produce markets. It was the destiny of Humpty Dumpty to end his life as an omelet, but there never was an omelet as thoroughly scrambled as the meanings of the words which were used to describe quality.

Farmers, dealers, handlers, all had their own way of measuring quality, and their own words to describe it. A word that might mean high grade in one section of the country might mean run of the field somewhere else. That made it hard to carry on business by wire, by telephone,

or by letter -- as a good deal of business in farm products must be carried on. It made it difficult for bankers to lend money on farm products stored in warehouses. Even when business was transacted face to face between farmers and dealers, the dealer could look at a load of something and say it was pretty low grade. The farmer might protest that it wasn't low grade at all. Unless there is an established standard to refer to, however, an argument like that can go on forever. It's a case of you saying no and me saying yes.

This situation couldn't continue because it's just as impractical to buy and sell produce without accurate quality measurements as it is to buy without accurate measurements of quantity. Good quality potatoes sell for more than low quality potatoes just as two pounds of something cost more than one pound of something.

In urgent need of standard measurements for quality, farmers, dealers, and bankers finally turned to the Federal Government and asked for help.

Not everyone asked the Federal Government to step in, however. Some people, while admitting that there was a problem, scoffed at any attempt to set up standards of quality for fruits and vegetables and other farm products.

Nature, they said, never made two of anything from the same mould. Every apple, every potato, every pea in a pod is different from every other apple, every other potato, and every other pea. It's ridiculous, they remarked scornfully, to attempt to work out yardsticks of quality for fruits and vegetables.

Maybe, Congress said, and maybe not. But the problem is so pressing it's worth working at.

Year 1 in the history of Federal standards of quality is 1902. In that year Congress appropriated money to the Department of Agriculture "to investigate the varieties of wheat . . . in order to standardize the naming of varieties . . . as an assistance in commercial grading." In 1906 standards history inched up a little when Congress authorized the Department to carry on special investigations in the grading of grain.

Apples are starred in the history of Federal standards for food because they are the subject of the first Federal law which defines a food standard. In a law passed in 1912 Congress said that standard grade apples, minimum size 2 1/2 inches (or 2 inches or 2 1/4 inches) are apples packed in a barrel for shipment or sale in interstate commerce which are 2 1/2 (or 2 or 2 1/4) inches in diameter, and are of one variety, and are also well-grown specimens, handpicked, of good color for the variety, normal shape, practically free from insect and fungus injury . . . The use of the apple standard was not made compulsory, however.

Standards took a definite spurt in the next year, 1913, when Congress moved along and passed a law authorizing the Department of Agriculture to grapple seriously with the problem of defining standards for all farm products by broadening its research in quality differences.

This scientific spadework brought an immediate legislative harvest in 1914, with the passage of the Cotton Futures Act which made the use of cotton grades (baled cotton, not cotton goods) mandatory under certain circumstances.

Two years later cotton, wool, grains, tobacco, and flaxseed won mandatory grades under somewhat similar conditions in the United States Warehouse Act which was approved on August 11, 1916.

Then in 1915 a telegrapher in the Department of Agriculture tapped a telegraph key to inaugurate the Federal telegraphic market news service, which reports to dealers and farmers on the prices and supplies of farm products in the markets throughout the country.

Immediately the men who ran the service came up with a bang against the fact that the prices they reported had no meaning unless they were based upon products of comparable quality. That required standards of comparison, or in the more usual phrase, standards of quality.

Additional experts were put to work on the formulation of grades that could be used and understood throughout the country.

War in 1917 gave a further impetus to the use of standards. The United States Food Administration, charged with feeding a nation at war, gave the movement a shove by requiring that all trading in potatoes be conducted on the basis of grades.

By the time the World War was over the use of Federal grades throughout the country was well advanced. In 1922 grading by Federal inspectors at farm shipping points was established, and thereafter the use of grades for farm products grew rapidly. Today about 90 percent of all commercially distributed farm products are sold by either Federal or State grades.

These grades, however, from wheat to lespedeza (a kind of hay), are not of much use to consumers. Fruits and vegetables change in quality on their way to retail markets. Grades for most fruits and vegetables are important to consumers, but only because they make marketing more efficient and thus reduce costs and prices. They are not guides for the consumer in the market place.

Can openers symbolize the next important standards development. By the time the can opener became the one gadget every family absolutely required to set up housekeeping, farmers discovered that an important part of their annual product was going to consumers after it had been detoured through a cannery. Canneries and other processors of fresh fruits and vegetables first of all needed special arrangements for the grading of the produce they used. These special arrangements came quickly, but then the dealers who traded in canned and dried fruits and vegetables began to demand Federally defined standards for these products just as dealers in fresh fruits and vegetables had asked for standards years before. The legal authority for Government grading of fresh fruits and vegetables, however, did not extend to canned and dried fruits and vegetables. A new law was needed.

Authorization for the Department of Agriculture to move over into the region where it could establish grades for canned and dried foods came in July 1931.

Now there are many notable differences between canned fruits and vegetables and fresh fruits and vegetables, but for consumers a major difference is that once a fruit or vegetable is put into a can it stays there until it is poured out in some consumer's kitchen. For the most part, too, the quality of canned fruits or vegetables undergoes comparatively little change during the time these products hibernate in cans.

Just as it established grades for fresh fruits and vegetables, the Department of Agriculture went to work under its new authorization and defined grades for canned and dried fruits and vegetables. A-B-C grades they are called, and they have been worked out for some 33 products.

The virtue of these grades is not only that they can serve both dealers and consumers, but also that they are so simple that the use of them by consumers requires no technical knowledge at all.

When a can of food is judged to be Grade A that means the fruits or vegetables in the can are about the finest obtainable, and that they have been carefully selected for size, color, and maturity.

Grade B fruits and vegetables have also been selected for color, size, and maturity, but with not such a sharp eye to perfection. While not the finest fruits and vegetables obtainable, they are nevertheless fruits and vegetables that are distinctly above average.

Grade C fruits and vegetables are good, wholesome, nutritious foods which may lack eye appeal. Just as nutritious as the top grades, they may not be quite as succulent. But they have their own advantage since they should sell at lower prices than the top grades.

The use of these grades is wholly voluntary. The grading service is maintained by the Department of Agriculture for whoever wants to use it, but no one is required to use it. Jobbers, bankers, and institutional buyers do use it extensively.

However, there are other standards whose use is not voluntary. They are standards of minimum quality and identity.

The first standard of identity for food dates back to 1923, a year which deserves encirclement on every consumer's calendar. In that year Congress, with butter producers urging it on, passed a law which set up a compulsory standard of identity for butter. This law declares that all butter entering interstate commerce must be "made exclusively from milk or cream, or both, with or without common salt, and with or without additional coloring matter, and containing not less than 80 per centum by weight of milk fat."

Despite the fact that producers furnished the pressure which put the butter law on the statute books, consumers benefited from the law

immediately and directly. While producers got protection from competitors who otherwise might have sold butter below this legal standard, consumers got the assurance that the butter they bought would meet certain minimum requirements.

Because the standard in this law carries all the way through to consumers, it is sometimes called a consumer standard.

If butter producers and dealers and consumers all find a compulsory legal standard for butter to their advantage, why, some people asked themselves, wouldn't compulsory standards for other foods be just as satisfactory?

This question germinated, and eventually sprouted in the shape of a law called the McNary-Mapes Amendment to the Food and Drug Act. This law became effective on July 8, 1931, 7 days after the Department of Agriculture received the go-ahead signal on the grading of canned and dried fruits and vegetables.

This law said: "The Secretary of Agriculture is authorized to determine, establish, and promulgate, from time to time, a reasonable standard of quality, condition, and/or fill of container as will in his judgment promote honesty and fair dealing in the interest of the consumer . . ."

Once a minimum standard of quality and fill (that's how near to the top a can should be filled) was established under this law, all foods that failed to come up to this standard had to be labeled to that effect in language and in type prescribed by the Department of Agriculture.

Starred in this law is the clause, "to promote honesty and fair dealing in the interest of the consumer . . ." Standards up until that time came about as a result of producer and trade demand to meet producer and trade needs. Here for the first time the Federal Government faced around the other way and provided for standards to meet a consumer need. One explanation why this happened is perhaps because consumers began to emulate producers and dealers and to make requests in their own behalf.

Climax to date in this history of grades and standards was, of course, the passage of the Food, Drug, and Cosmetic Act of 1938.

Consumers got full-fledged recognition again in this law when Congress said the Secretary of Agriculture could, "to promote honesty and fair dealing in the interest of consumers," promulgate regulations to establish:

1. A reasonable definition and standard of identity for any food,
2. A reasonable standard of quality, and/or
3. Reasonable standards of fill of containers.

In addition this law gives the Department of Agriculture the power to require labels to show what is in a food when no definition and standard of identity have been established for it.

Right now the Department of Agriculture is hard at work holding hearings, at which consumers are urged to be present, where these standards and definitions are being worked out for a long list of foods.

Under the present law when a food fails to meet the standard of identity fixed for it, it may not be labeled as such a food. When a food falls below the minimum standard of quality set for it, the label must show that the food is inferior.

It's important, however, to bear in mind the difference between a food which falls below the minimum standard of quality set for it, and a food which is illegal because it is unwholesome. A food may fail to come up to the minimum standard of quality and still be wholesome food. Since it is wholesome it may be sold as substandard but good food. Food that is so inferior in quality that it is unwholesome may not be sold at all.

These are the two bottom rungs on the ladder of quality. Consumers who go shopping behind the plate glass of grocery stores know, however, that while minimum standards of quality and guarantees of wholesomeness are essential, they are not enough.

Like Alice, consumers have the problem of coping with adjectives describing the quality of foods which rate above the minimum standard of quality.

Dealers, producers, and canners long ago learned that it was impossible to buy intelligently without quality measurements, that is without recognizable grade standards. Today, by far the greatest part of their business is conducted on the basis of grades.

Headquarters in Washington for promulgation of A-B-C grades is the Agricultural Marketing Service of the Department of Agriculture. In this agency men thoroughly familiar with the character and complexion of the canning industry as well as of fruits and vegetables have the job of working up strictly defined, meaningful, useful A-B-C grade designations for canned, frozen, and dried fruits and vegetables.

These grade definitions are not sucked out of an expert's thumb. Working up the grades leads the men who make the definitions first to the botanists who know the fruit or vegetable scientifically. Then the advice of farmers is sought to determine what they think. Dealers get their opinions on record. Packers are urged to describe what they think is feasible. And in recent years the preferences and prejudices of consumers find expression in grades too. Finally after consultation with all the persons and interests involved a grade is worked out. When this is done it is promulgated usually as a tentative grade with the recommendation that it be used and that its shortcomings, if any, be noted so that they may be corrected.

After a grade has been thoroughly tested and revised, it is then promulgated again as a permissive grade in the case of dried and canned fruits and vegetables. This means that the grade definition itself is official, but that it may be used or not as dealers and packers and canners see fit.

When canners or packers or dealers want to label their products with A-B-C grade designations, they can do one of two things.

First of all, they may grade the product themselves, and simply pass this information on to consumers by printing the grade on the labels of their products. Since the labels must be printed anyway dealers who take this shortcut can give consumers grade label designations at no cost to themselves.

If a canner does not know the grade of the product he is selling, then he can ask the Agricultural Marketing Service to grade it for him. He may apply for the grading service to the Agricultural Marketing Office in any one of 44 cities scattered throughout the country. If this is inconvenient there is more than likely a sampler in his town licensed by the Department of Agriculture but not a Government employee, with whom he can file his application.

Samples of the goods to be graded are selected in such a way and in such quantity that they will be typical of the entire lot of goods being graded. These samples are sent to one of the 18 offices maintained throughout the country where grading of canned fruits and vegetables is actually performed. As soon as the quality of the product is determined from the samples a certificate setting forth the grade is given to whoever requested the grading service.

That this certificate is a reliable indication of quality is witnessed by the fact that it is accepted by the courts as prima facie evidence of the quality of the goods.

For this grading service a fee is charged. However, when dealers in wholesale quantities have canned goods graded the charge per can is microscopically small, something around 1-100th of a cent per can.

If there is any question about the grade of a lot of goods, an appeal may be made and the goods will be regraded by experts whose job it is to handle appeals.

There are no statistics on the quantity of canned and dried fruits and vegetables which are now sold at retail with A-B-C grade designations on their label, but it runs up into millions of cans. They are sold in stores where consumers have asked for them. Most consumer cooperatives sell canned goods with grade labels. One national chain organization offers its customers A-B-C labels as a guide in marketing.

Dealers and canners, of course, demanded this service originally for their own use. But consumers, awake to their own need for grades, have now begun to ask that packers and dealers pass along this useful information to them.

In response to requests by consumers, the Agricultural Marketing Service recently revised the schedule of fees charged for the grading of canned fruits and vegetables so that consumers could use the service too. Formerly the minimum charge for grading was $1. Under the new schedule consumers may submit one can of food and get it graded for as little as 35 cents.

The service is not much use to consumers who buy a can of something at a time. It can be very useful, however, to consumers in buying clubs or in cooperatives who pool their purchases and buy in lots of several cases. In such instances consumers may take a can of the food they propose buying, send it to the Agricultural Marketing Service office for grading, and thus make sure that they are buying the quality they think they are buying.

CONSUMERS' GUIDE Separate No. 37-M

UNITED STATES DEPARTMENT OF AGRICULTURE

CONSUMERS' COUNSEL DIVISION

WASHINGTON, D. C.

FINISHING YOUR FLOORS

AND

CLEANING YOUR WALLS

FINISHING YOUR FLOORS

For consumers lucky enough to have floors that deserve preserving, knowing rules to follow in finishing, refinishing, and maintaining surfaces can save effort and money.

In a famous palace in Prussia, tourists, practically pop-eyed from the splendor, were required to slip fur overcoats over their shoes so they wouldn't scratch the polish on the highly waxed floors. The palace was misnamed "San Souci"--or "Carefree," to slip back into English. "Carefree" was not exactly the word for the backbreaking care those floors took from the servants.

Now most American homes are made to live in and not for the purpose of having guides lead tourists around in them. So there is very little demand for the kind of floors you can only tread with a pair of fur boots. Housewives want polished floors, however, to reflect their pride in their homes. And they want them polished so floors won't be so hard to keep clean.

Electricity, speakers keep saying over and over again, is man's willing slave, and the housewife's. Thousands of slaves in fact. But when you get around to it, electricity hasn't got into nearly enough homes to free American housewives from avoidable drudgery.

This is one of the two essential nubs in the floor-finishing problem, for the best way to finish floors is with electrically powered machines, which most consumers can't afford to use. The other nub is that there are too many American families living in houses so bad that a delicately phrased article on the finish of floors sounds like a sublime non sequitur. We need homes fit to live in, millions might say, before you tell us to wax our floors.

Plainly no one is trying to talk floor finish to people who have major problems that come far ahead of their floor finishes. Here it is proposed to give some floor finishing advice to those who are lucky enough to live in something better than the houses euphemistically labeled "sub-standard."

If your floor has been finished at all, it has very likely been finished with one of four preparations--linseed oil, floor seal, shellac, or varnish.

Linseed oil was the choice of householders in the days when everything that went into a house was massive and every operation was a hand operation.

Recently, however, preparations known as floor seals have been placed upon the market for those consumers who like the appearance of the old-time oil finish but who do not like the labor involved.

Householders who prefer highly polished floors use shellac or varnish well waxed. Of these, varnish is the more durable. It is also less likely to scratch. Nor does it have the tendency of shellac to turn white when water drops on it. Shellac is used, despite its disadvantages, because it dries so quickly that a floor may be walked on 24 hours after it has been shellacked.

All four finishes--oil, seal, varnish, and shellac--should be waxed every 4 or 6 months. But shellac floors should not be waxed with preparations containing water. For shellac a paste wax should be used instead of a water emulsion wax.

To keep floors clean between waxings, all that you need to do is to sweep them (you didn't have to be told that), and dry mop them. For the dry mopping, use a soft cotton floor mop kept barely dampened with a mixture of 3 parts kerosene and 1 part paraffin oil. When the mop gets dirty, wash it out in hot water and soap, dry it, and dampen it once more with the kerosene and paraffin prescription.

When a spot of dirt on your floor stubbornly resists simple mopping, go after it with a pad of fine steel wool dipped in turpentine.

If the finish is a floor seal, you will occasionally come across gray spots which have been caused by water allowed to stand on the floor for a time. Turpentine does not help here. Instead, sandpaper the spot away, patch it up with floor seal, and buff it smooth again with steel wool.

Varnish ordinarily will not spot with water scars. But when it gets very dirty, it requires rather drastic action. Liquid varnish remover is first applied to the sore spot, then it is sandpapered, the spot is dusted clean, and finally floor varnish is applied to the wound.

Shellac finishes may be cleaned with steel wool that has been saturated with clean turpentine. Water spots will come out if rubbed lightly with a soft cloth that has been moistened in a half-and-half mixture of denatured alcohol and water.

Eventually floor finishes do wear down to the point where they need refinishing. How this is done depends upon the type of finish that must be stripped away.

Floors that have been finished with oil respond only to the most vigorous treatment. Where a steel wool buffing machine is available, it may be possible to remove the finish by machine buffing with a No. 3

steel wool. If no buffing machine is at hand, or if it won't remove the finish, chemical treatment is necessary. Milk alkalies--a water solution of trisodium phosphate, washing soda, a commercial cleanser, or lye--any of these will change linseed oil to soap. But do not use too strong a solution. Too strong an alkali swells and softens wood.

In applying the chemical treatment the alkali solution should be flushed over a small section of the floor at a time. After letting it stand a few minutes, scrub the floor with a stiff brush or a No. 1 steel wool.

The scrubbing will produce a soapy solution which should be removed by flushing with clean water. Mopping and drying follow this operation.

Occasionally floors will turn gray under this treatment. In this case the floor should be bleached with a saturated solution of oxalic acid in water. More care is required here, for oxalic acid is a poison. After it is applied, the floor should be rinsed with clean water, mopped, and given a chance to dry completely.

Varnish finishes may be removed either by an electric sanding machine or with a liquid varnish remover. Alkaline solutions in water, or powders which are dissolved in water, should not be used for this purpose. When you shop, specify "liquid varnish remover" and ask whether or not it contains water.

Directions will accompany the remover, and they should be followed carefully. Once the varnish is removed, rough spots should be sandpapered smooth.

Where a shellac finish is beyond salvaging and a sanding machine is not available, it may be removed by washing the floor with a neutral or mildly alkaline soap and as little water as possible. After the soaping, the floor should be rinsed with a minimum amount of clear water, and then scoured with a No. 3 steel wool and a "half-and-half" mixture of denatured alcohol and water. Another rinsing with clean water follows this operation.

Before getting down to the work of applying a finish to these old floors, however, let us also assume that you have a new floor to be finished.

The initial and most important step in finishing floors is scraping. Originally this operation was done by hand. Today an electrically operated sanding machine is used. Where householders are supervising the building of their own homes, they should make sure that the bearings in the machine are well aligned. They should also make sure that the scraping machine is operated by a man who specializes in floor sanding.

After a floor has been sanded, it should be swept clean and a careful inspection made for scratches, waves, or blemishes.

Hardwood floors require an additional step before the finishing operation actually begins. Before applying varnish or shellac to a hardwood floor, wood paste filler is rubbed onto the flooring to fill up the wood pores. Wood filler can be used either colored or colorless.

Householders may want to stain their floors. This step in floor finishing also precedes the application of the finish. If any stain is to be used, it should be an oil stain. If the floor is to be finished with a floor seal, preparations may be obtained which combine floor seal with the oil stain. This preparation, however, should only be used for the first coat.

The seal should be permitted to dry somewhere between 15 minutes and 2 hours. Just how long depends upon the seal, but if the directions accompanying the seal arenot explicit, householders can make trial tests themselves on the edge of the floor. The trick is to start the next operation, which consists of wiping up the excess seal with clean rags or a rubber squeegee, before the seal begins to gum.

After the excess seal is wiped away, the floor should be buffed either by hand with No. 2 steel wool, or with a power machine. The floor then should be swept clean and a second coat of seal applied.

Specifications for floor shellac are precise enough. For their floors consumers should insist on 5-pound cut shellac varnish, unadulterated with resins. Besides they should insist that it be either freshly manufactured or packed in glass containers. The shellac should then be thinned with 188 proof No. 1 denatured alcohol at the rate of 1 quart of alcohol to 1 gallon of shellac.

The first coat of shellac should dry for 15 or 20 minutes, and then the floor should be buffed lightly with sandpaper or steel wool and swept clean.

The second coat of shellac should be permitted to dry for 2 or 3 hours, buffed lightly again, swept, and then the third coat should be applied. Best practice is not to walk on the floor till the following day. If it is necessary, the floor may be used within 3 hours after the application of the last coat. If the floor is to be waxed, the waxing should wait at least 8 hours after the application of the third coat.

Varnish labels tell how varnish should be applied to the floor for sure-fire results. To resist an over-persuasive label, consumers should remember to use only a floor varnish on their floors. All-purpose varnishes do not finish floors as well as varnishes designed only for floors.

If paste filler is applied to the floor before the varnish, or if shellac is used as the base of a varnish finish, only two coats of varnish are needed. Where varnish is applied directly to the bare wood, three coats will be needed.

Varnish should be put on a clean floor, with a clean brush. During the varnishing, the temperature of the room should be maintained at 70 degrees or higher, and plenty of fresh air should be kept circulating in the room.

All types of floor finishes should be waxed. This is done most efficiently and most simply with a power waxer and paste wax. First the paste wax is mopped onto the floor, and is permitted to stand for 15 to 30 minutes. After this the floor is polished with the machine.

For persons who cannot afford polishing machines, there are water emulsion waxes which are mopped onto a floor and permitted to dry without further polishing. But these cannot be used on shellac floors because they may turn the shellac white.

In some homes floors receive no attention at all, with the result that when something is decided to be done about them it will frequently be found that not only the floor finish but also the floor itself will have to be renewed. When that time comes flooring experts advise that the old floor be leveled off and made tight, and the new floor laid right on top of it.

The top new floor should be laid at right angles to the old floor. If there were squeaks in the old floor, these can be overcome by ample and thorough nailing. Nails in this job are squeak insurance.

Installing the new floor may solve other problems, too. If the old floor was damp or cold, a 15-pound, asphalt-saturated felt paper should be placed entirely over the old floor before the new one is laid. This is especially essential on the first floor. It will tend to keep cellar moisture from reaching the bottom of the finished floor and prevent expansion and warping. This paper also acts as a sound deadener and helps to prevent squeaks. For rooms directly over the heating plant it is advisable to use double-weight, 30-pound, asphalt-saturated felt, or a standard insulating board one-half inch thick. This will provide insulation against excessive heat.

For the family that has made up its mind either to go at its floors seriously or to build a house, the Division of Forest Products of the Department of Agriculture's Forest Service has prepared a useful and thorough-going pamphlet. "Selection, Installation, Finish, and Maintenance of Wood Floors for Dwellings" is its title; 489 the number. It may be had by sending 5 cents in cash to the Superintendent of Documents in Washington, D. C.

HOW TO CLEAN WALLS

Doing a careful clean-up job can save the expense of new paper or paint. Here are some helps to thrifty homemakers

Oriental potentates with tapestry-lined palace walls have one domestic advantage over the American housewife. If their walls look smudgy, they merely snap their fingers and, presto!--the tapestries are down and hurried off to the Oriental equivalent of the dry cleaner.

All of which may be so much fantasy, but it has a moral for house cleaners who take one look at walls marred by sticky fingers of 3-year-olds or blackened by a winter session of coal dust, and who promptly begin juggling the family budget to squeeze out a few dollars for a new paint or paper job.

Walls can't be dismantled and whisked off to the nearest laundry, of course. And it wouldn't do much good to spray them with cleaning fluid and let it go at that. But neither do large chunks have to be sliced out of the budget to renew the wall finish every time it gets dirty. From the household remedies of the last generation to the streamlined packages on today's store shelf, the housewife has an array of formulas and preparations to clean painted and papered walls.

Applying most of them is largely a matter of following directions. But walls done in fine oils or delicate tints sometimes require the expert touch if streaks and fading are not to be the first result of cleaning. Likewise, a heavily embossed wall paper or one not guaranteed washable might be more damaged than cleaned by ordinary cleaning methods. For these not-so-common cases, the expert advice of an experienced decorator is needed before cleaning methods are decided upon.

For most interiors, the amateur hand may do as efficient a job as the trained one. The methods here described are meant to meet the ordinary house-cleaning problems.

Walls--painted or papered--should be dusted regularly and completely if dirt is not to become imbedded in the finish almost beyond hope of removal. A soft duster is best. It doesn't scratch and it gathers up the dust quicker than a broom or a stiff-bristle brush. A long-handled soft hair brush will do the job. Just as good is an outing flannel bag on a broom. Wool brushes are expensive and they require a great deal of care to wash and keep clean. If you use a soft cloth or cotton, rotate the wiping surface; then you won't be rubbing on more dirt than you take off.

Domestic experts say the best method for cleaning walls is to begin at the bottom and work up, making a particular point of getting into corners, crevices, and concealed areas--around radiators, for example. Particular care should be taken with wall paper. Hard rubbing can easily mar or

injure it. A very even stroke with little pressure won't blur the pattern or spot the paper.

Spot removing, thorough cleaning, and washing of walls require a combination of wisdom and skill.

First, a few tips on painted walls. The wrong way to wash down a painted wall is to take a strong laundry soap or powder, mix up suds and get to work. True, you will remove dirt. But white paints will end up yellowed; and colored paints won't look very much like the original.

The right way is first to make sure that the paint on your walls is washable. If it is an oil paint, and washable, a cloth or sponge wrung out of light suds made with the mildest of soaps or soap powders and rubbed on the wall with even strokes will clean a moderately soiled wall. Mild soap has a very small alkali content. Rinse the wall with a cloth or sponge wrung out of clear water, then wipe dry with a soft cloth.

Bureau of Home Economics experts warn against using coarse scouring powder or strong alkali on paints. A jelly made from a neutral soap is their suggestion. It should be applied with an up and down stroke. The wall should be rinsed with clear water and then dried.

Badly soiled painted walls--particularly those of rough plaster--usually respond to a treatment of whiting carefully applied with a cloth moistened with hot water. A small space should be cleaned at a time. Rinse the wall with clear water; use a soft cloth for drying.

If the wall is slightly soiled but needs a complete freshening up, try this solution: 2 tablespoons of mild soap powder, 3 tablespoons of turpentine, and 1 quart of warm water. Dissolve the soap powder in warm water, add turpentine, and stir rapidly. A cloth, sponge, or brush can be used to apply the mixture to the wall. Rinse the wall with clear water and dry.

Enameled walls, one writer has said, should be washed like a dish. This might hold if you use plain water on your dishes. The big thing to remember when cleaning enameled walls is that strong alkaline soap dulls the paint, removes its luster. A woolen or cotton flannel cloth wrung out of hot water will clean a moderately soiled enamel painted wall. Wipe the wall dry with a soft cloth. Whiting can be used for spots, stains, and dirt that don't yield to ordinary water. But rub the whiting on lightly or you will scratch the paint.

The enamel painted wall that is extremely dirty can be cleaned with any of the solutions already suggested for oil painted walls, or with one of these 3 solutions: (1) one ounce of sal soda in 2 gallons of water; (2) half an ounce of laundry soda in 2 gallons of water; or (3) half an ounce of trisodium phosphate in 2 gallons of water. To protect the gloss take care not to make any of these solutions too strong. A small portion of the wall should be washed at a time, followed by a rinse of clear warm water, then dried with a soft cloth.

You can't clean most calcimined walls. They can be wiped down with a dry, soft cloth, but washing them results in streaks and fading. Cheap in the beginning, they may prove to be more expensive than enamel painted walls because of the necessity of redoing them every time they get a layer of dirt on them.

One point to remember, whatever cleaning formula you choose, is always to rinse with soft water. If the wall is rinsed with hard water or ifaa thorough job is not done, the result may be streaks, cloudiness, or spots.

Commercial cleaners for painted walls there are aplenty. The "read-the-label" rule should be followed to the letter here. Most common ingredient of the commercial cleaner is trisodium phosphate. Used right, it does an excellent job--but, used wrong it can destroy the finish of a wall completely. It is by no means "foolproof."

Cleaners with sodium metaphosphate (which also softens water) do a good job when combined with a mild soap or soap powder. The chemical dissolves dirt immediately, requires little work, and will not injure the paint.

Sulfated fatty alcohol--"a soapless soap"--comes in a powder or paste form for cleaning walls. One tablespoonful in a gallon of warm water does the job.

To apply any of these solutions, take a large section of the wall at a time. Use a circular motion. Then, after rinsing according to directions, wipe the wall with a turkish towel wrung out in plain water, using a straight up and down motion.

If the luster of the wall is lost in washing, it can be restored by application of liquid wax. This protects paints and makes future cleanings easier.

Some wall papers are guaranteed washable; others can be easily ruined by application of moisture.

Washability is one point for the consumer to look for in buying wall paper. A wall paper trade association has recently issued specifications for papers which may bear its seal of approval. Cleansibility is listed as one of the specifications, and all papers carrying this seal "must be cleansible--that is, the surface must resist water so that it may be wiped off with a damp sponge without damaging the color or surface." There is, of course, no official approval or enforcement of the requirements of this manufacturers' guaranty. The commercial standard for wall papers, issued by the National Bureau of Standards, and adopted voluntarily by the trade, does not include a guaranty of washability. However, the wall paper manufacturers realize the importance of such a provision and propose to include it in a revision of the commercial standard now under way.

For papers that are washable, one caution is not to use too much water, as the wall paper will easily soak off. A very mild soap solution,

applied carefully to washable heavier wall papers with a soft sponge, will be successful. Dry the wall with a soft cloth after rinsing. On the light washable papers, use a clear lukewarm water with no soap.

Wall papers can also be cleaned fairly successfully with the commercial pastes or powders on the market. An expert can do the job much better than an amateur; in any case, directions should be followed to the letter if spots and streaks are to be avoided. It is always wise to try any such cleaner on the paper behind a picture or a door to be sure the color or pattern won't come off along with the dirt. If it works right, clean one strip of surface at a time, working from top down. Slightly overlap each strip of the paste type cleaner, folding the soiled part under when the cleaner becomes dirty.

You can make your own "paste" with ingredients out of the pantry. Here's a tested formula put together by the Louisiana Experiment Station: 2 cups of flour, 1 cup of warm water, 2 tablespoons of salt, 2 tablespoons of kerosene, and 4 tablespoons of household ammonia. Mix them all together, then cook in a double boiler over boiling water until the paste no longer sticks to your hand when rolled between the fingers. Cool in a covered pan. Use on one strip of paper at a time by rubbing in only one direction and folding the dough over as its surface becomes soiled. Overlap each strip cleaned so that streaks will be avoided.

You can get other formulas for homemade wall paper cleaners by writing for circular 183, Pennsylvania State College, School of Agriculture and Experiment Station, Division of Agricultural Extension, State College, Pennsylvania.

Soft stale bread is a favorite household remedy for soiled wall paper. The scratchy crust of the stale bread is cut away, and a fresh part of the loaf used as fast as it soils. Rub the bread over the wall in long, even, vertical strokes. And don't press too hard on the wall.

Fresh grease spots--from oily hair, for example--usually come off if a hot iron is pressed against a blotter held against the spot. Two or three applications may be necessary before the spot melts off, but too persistent an ironing can scorch the wall.

Another way to get rid of grease spots is to apply a thick layer of fuller's earth, or talcum powder. Left on the spot for 24 hours, and then lightly brushed off, either of these may get rid of the blemish.

A bad stain can be treated with ordinary household hydrogen peroxide (3 percent). But this may change the color of the paper slightly, so try it on a hidden spot behind a picture before you decide to use it.

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VITAMIN FANCIES AND FACTS

Scientists, cautioning consumers against believing everything claimed for vitamin products, say we are just at the beginning of vitamin wisdom.

"Feeling Sluggish? Appetite bad? Losing weight? Complexion below par? In short, is there anything wrong with you? If there is, you need vitamins. You need them for breakfast, lunch, supper, and don't forget the good-night snack. You need Vitamins A,B,C,D,E,F,G,H--all the way down to Z--and you need them concentrated, a capital dose, something you can gulp down with a glass of water, or a pill to melt on your tongue. If you don't get them, beware. Quick, now...look for the package wrapped in cellophane. Take your vitamins three times a day, and you'll never have another doctor's bill. This is the twentieth century miracle--the fountain of youth, yours for the asking at your drug or grocery store counter."

Sounds like the modern version of the street corner medicine man who ballyhooed snake oil as the sure cure for everything, you say? Exhortations like these greet modern consumers at almost every corner, over the air, on paper, in packages. You are told you can get your vitamins in de luxe style or just plain. Once you have them, you are assured, your troubles are over. And you don't have to go far to get them. You can buy vitamin milk, vitamin rich soap ("soaks the vitamin in through the skin"), vitamin candy bars, vitamin tooth paste, and vitamin rich breakfast cereals. The world is waiting for the wizard who invents a vitamin hat!

The business in vitamins runs up to $100,000,000 a year, so consumers are to be pardoned for being impressed, and even for asking: Do I really need all these vitamins, or is this just a fad, like weight-reducing? The consumer does well to ask.

Even scientists in the laboratory have hardly laid the cornerstone of vitamin research. A good start has been made on tracking down vitamins, identifying them, busting them up into their own little family trees, but scientists will tell you they are only starting to learn the mysteries of these food nutrients. They know something of the best sources of the vitamins they are already acquainted with. They will inform you with some assurance of things likely to happen to you if you run shy on several vitamins.

Only a little progress has been made in setting up requirements of the human body for each of the known vitamins. Some work has been done in developing methods of preparing foods with a minimum loss of vitamins. And finally, the last few years have seen some progress in the preparation of what--for want of a better name--have been called "concentrated vitamins," in the form of capsules, pills, and fish oils (see Consumers' Guide, Vol.IV, No. 23).

Here the awed consumer inquires: "Do I need these concentrated vitamins?" There's no rule of thumb that answers that question.

Consumers should remember two things when they sit down to figure out the meaning of any type of vitamin ballyhoo.

First, the average person--unless his doctor tells him differently--can get all the vitamins he needs from a balanced diet of carefully selected foods, properly prepared, and served 3 times a day.

And, second, so far as scientists know now the only people who really need vitamin concentrates are babies and young children, expectant and nursing mothers, persons recuperating from sickness, and those following doctor's orders. If you think you need vitamins in a special form, go to your family physician. Chances are he can fix up your diet to give you an ample supply of vitamins. If he can't, he will give you a druggist's prescription, and you will take your "concentrates" in full knowledge that you are not acting on a hunch that can cause deep inroads in your personal budget.

Defining a vitamin would be a neat little problem to pose on any of the radio quiz programs. You can't be too specific about what they actually are without considering each one separately. Scientists in the Bureau of Home Economics, United States Department of Agriculture, describe them as "distinct chemical substances, each having its own special function to perform in the body." When scientists are as cautious as that, it's a wise consumer who pauses before believing everything said for these substances. Below is a digest designed to clear up the problem for consumers so far as present-day knowledge and research makes this possible.

Vitamin A: Stimulates growth and aids general well-being. Without it, you may have defective teeth and bad bone formation, low resistance to infection, and arrested growth; loss of reproductive power can result from its absence in the diet. A shortage of the vitamin sooner or later results in inability to see well in a dim light. This is called nutritional night blindness, and should not be confused with impaired vision from other causes.

Vitamin A is found in eggs, butter, cheese, whole milk, cream, and fish-liver oils. Leafy greens, green and yellow vegetables provide "pro-Vitamin A," which is changed to the vitamin itself in the body. The deeper the green or yellow color of the vegetables, the more Vitamin A you will get from them.

Since very little of this vitamin is destroyed in cooking, and practically none dissolved in cooking water, no special kitchen rules have to be followed for retaining it when preparing foods for the dinner table.

Vitamin B (also called thiamin and aneurin): This one helps appetite . Without it, you tend to lose your appetite, become listless, have a sluggish digestive system, and nervous irritability. A serious deficiency of the vitamin results in beriberi. An abundance of thiamin is essential for expectant and nursing mothers.

Richest sources are whole seeds (whole grain cereals, especially the germ portion), and legumes, including peanuts and soybeans. Green peas, and green lima beans, prepared properly, are well supplied with the vitamin, as are pork, kidney, liver.

Vitamin B soaks out into cooking water, is easily destroyed by heat, and the addition of baking soda to the cooking water greatly reduces the amount of Vitamin B. Follow this rule: Cook fresh vegetables as short a time as practical, in the smallest possible amount of water, and use the cooking liquid. Don't add soda to the cooking water when you cook fresh vegetables.

Roasting, broiling or stewing meat will cut its Vitamin B content almost in half.

Vitamin C (also called ascorbic acid and cevitamic acid): The body does not store Vitamin C, as it does the other vitamins. Therefore a steady daily supply is important. Serious deficiency of this vitamin results in bleeding gums, loose teeth, sore joints, loss of appetite with loss of weight, and fatigue. Scurvy follows on the heels of any prolonged shortage of the vitamin in the daily diet.

Citrus fruits and their juices--oranges, grapefruit, lemons, limes, tangerines--all abound in Vitamin C. Tomatoes and tomato juice are another major source for it. Various types of berries, cantaloups, any type of leafy and green vegetables are all good sources of Vitamin C.

Vitamin C is the most easily destroyed of all the vitamins in cooking canning, and storing. Addition of soda to cooking vegetables destroys it. The rule to cook fast, use little water, and serve the cooking water is a good one to follow.

Less of the vitamin willbe lost when foods are stored if they are put in a cool place. The fresher the vegetables, the greater their Vitamin C content. "Frosted" or frozen vegetables should be dropped immediately into boiling water when cooked, not "thawed out" gradually.

Vitamin D: Vitamin D is especially important for babies, young children, and expectant mothers. Well-formed teeth and bones depend on a good supply of this vitamin. A prolonged deficiency of it during childhood will result in rickets.

Best food sources for Vitamin D are fish-liver oils, salmon and other oily fish, and egg yolk. Because it is not present to any great extent in ordinary diets of children, nutrition specialists recommend that growing children receive from one to two teaspoons of cod-liver oil or its equivalent daily to insure good teeth and bones. The amount of cod-liver oil to give depends upon its Vitamin D potency.

Medicinal grade cod-liver oil states on its label that it contains not less than 85 U.S.P.(United States Pharmacopeia) units of Vitamin D per gram. Any cod-liver oils are considerably higher in potency, and many low-priced oils meet or exceed the standard. A teaspoonful of a cod-liver oil that provides 150 international or U.S.P. units per gram will cover the Vitamin D requirements for the day in infancy and childhood. If a less potent oil is used, 1½ to 2 teaspoonfuls a day may be required.

Other vitamin products may also meet the standard, but mothers not familiar with vitamin units should consult their family physician if they want to be sure their children get an adequate supply.

Getting plenty of sunshine is another way of building up a supply of Vitamin D--often called the "sunshine vitamin." The human skin contains "pro-Vitamin D" which turns to Vitamin D under direct exposure to the sun for short periods. Many foods--such as milk--today carry on their labels the statement "irradiated with Vitamin D." Unless you are sure that the amount of Vitamin D provided in the irradiated food consumed by the child covers his daily requirements, it is wiser and cheaper to get the vitamin from fish-oils than to rely on these sources.

The best of vitamin scientists advise against trying to get sunshine in soap or face creams.

Vitamin D is not affected by ordinary cooking, and doesn't dissolve in water.

Vitamin E: This vitamin is essential for reproduction. The germ of the wheat grain is an excellent source, as are vegetable oils and green leafy vegetables.

The vitamin is not easily destroyed by heat.

Vitamin G (also known as riboflavin): Work on this vitamin is still in the experimental stages, but research on animals shows that a deficiency of riboflavin results in retarded growth, loss of hair, and nutritional cataract. In human beings scientists now know that a shortage of the vitamin results in sores on the lips, and reddening and scaling of the skin about the mouth, nose, and ears.

Excellent sources of this vitamin are liver, kidney, heart, lean meats, eggs, cheese, milk (skim, whole, condensed, evaporated), turnip tops, beet tops, kale, mustard greens, and various types of seeds and other products such as peanuts, soybeans, wheat germ, and rice polishings.

Riboflavin is not affected by cooking, but is easily destroyed if soda or other alkaline substances are present. It dissolves readily in cooking water. The rule: Serve the cooking water or dissolved juices with the food.

Pellagra-Preventing Vitamin (nicotinic acid): One of the newer discoveries in vitamins, it made its debut without the formality of getting a letter attached to its name. Deficiency of nicotinic acid results in pellagra. Loss of appetite, loss of weight, and general weakness are the early symptoms. In its worst stages the disease results in sore mouth, digestive and nervous disturbances, and skin eruptions.

In the past few months scientists have succeeded in producing nicotinic acid in the laboratory at an almost negligible cost. Hailed as one of the foremost scientific advances in recent years, the discovery promises to be a major weapon in the fight against pellagra in regions of the country where the disease is prevalent.

Best food sources of nicotinic acid are lean meat, chicken, liver, leafy, green vegetables and green or dried peas and beans. Nicotinic acid dissolves readily in water.

In General: Generally the family whose daily diet includes plenty of fresh green vegetables, fruits, cuts of meats, animal organs, milk, butter, cheese, eggs, whole grain cereal products, and legumes should not have any vitamin troubles. Special vitamin concentrates have to be resorted to only when your doctor says so, and when there are babies and young children in the family who need liberal amounts of Vitamin D.

As important as proper choice of diet are proper cooking methods. Thiamin, ascorbic acid, riboflavin, and nicotinic acid all dissolve readily in water. To get the most out of foods rich in these vitamins, cook them in the smallest amount of water possible, and then serve the liquid with the cooked food or in the form of a sauce, gravy or soup. Foods rich in thiamin and ascorbic acid (easily destroyed by cooking) should be cooked as quickly as possible; in no case should soda be added to fresh vegetables well supplied with these vitamins.

Tens of thousands of American families, well able to afford proper diets, suffer from lack of certain vitamins, even though they are only "borderline cases." Unwise selection of the daily menu is the major cause. All consumers, whether with bulging purses or with thin ones, should as far as possible plan their diets with an eye to health value as well as appetite appeal.

CONSUMERS' GUIDE Separate No. 39-M

UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMERS' COUNSEL DIVISION
WASHINGTON, D. C.

"ON THE SPOT"

Know your fabrics, chemicals, and techniques if you want to cut cleaning costs by home doctoring of spots.

FOR PEOPLE with elastic budgets it's easy to let the dry cleaners do the job but too many people have budgets that aren't that elastic. Becoming a skilled amateur in the cleaning and spot removal game is one way to keep the budget balanced and at the same time to keep the family's clothing in the pink of condition. No snap assignment, this success comes to those who know a few basic facts about the effect of chemicals on different fabrics, and what kind of cleaning agent is best for removing stains caused by various substances. Also, one must exercise patience, care, and skill in using cleaning agents. What caused the spot? What kind of textile fibers is the stained material made of? Is the fabric washable? Is it colorfast? Correct answers to these questions plus prompt action and good technique in manipulating cleaning agents are the key to successful spot removal.

FACTS ABOUT FABRICS

Cotton and Linen

1. Strong acids dissolve cotton and linen fibers. Use only diluted acid solutions, followed by weak alkalis, and always rinse thoroughly.
2. Alkalis and hot water may be used but materials should not be exposed to them for too long a time.
3. Bleaching agents should be sparingly used, never in concentrated form or for long periods at a time (see color).

Wool and Silk

1. Never use strong alkalis on wool or silk.
2. Never use hot water on wool or silk.
3. Never rub wool or silk excessively.
4. Bleaching agents containing chlorine should not be used.
5. Dilute acids with the exception of nitric acid can be used.

Rayon

1. Handle carefully when wet, as water weakens fibers.
2. Diluted acids may be used.
3. Never use concentrated acids or strong alkalis.
4. Never use solutions containing acetone, chloroform or ether on acetate rayon.

Colored Materials

Always experiment with an unexposed portion of material - the hem or inside seam - before applying a chemical cleaning agent or bleach. Frequently they will attack dyestuffs, and one has to make a choice between a stained or faded spot. When using chemicals the work must be done rapidly and the material rinsed thoroughly. Sometimes a change in color due to an acid treatment can be restored by a weak alkali - either by holding the spot in the fumes from a bottle of household ammonia or sponging it with an ammonia solution. (See kit directions on page 4). Acetic acid will often restore color that has been changed by alkalis.

FACTS ABOUT CLEANING AGENTS

Most agents are absorbents, solvents, or bleaches.

Absorbents

Fuller's earth, meal such as cornmeal, chalk, are harmless to all fibers and are easy to apply. Best results are obtained when the stain is fresh or still moist, and the absorbent powder is spread on the spot at once. Its action is like that of blotting paper. It takes up the stain.

Solvents

These are substances which dissolve others. Use water as a solvent whenever possible. Even spots on unwashable materials can sometimes be sponged off with water.

Boiling water poured from a height of three or four feet on a stained colorfast or white cotton or linen material is especially effective for removing fresh coffee, tea, and fruit stains. The force of the hot water poured from a height will frequently drive out the stain. Hold stained portion taut by fastening it over a bowl with an elastic band.

Carbon tetrachloride is the base of many noninflammable commercial grease solvents and is safe to use on all fibers. Other solvents are alcohol, ether, gasoline, naphtha, kerosene, glycerine, chloroform, turpentine. The first 5 mentioned are inflammable. It is not wise to use them in the home.

Pad and Sponge Method is a good technique to use when applying grease solvents, or when removing stains which dissolve readily. Brush off all dirt. Turn stained material inside out. Place it on a clean absorbent pad. Dip sponging cloth in cleaning fluid, press out excess moisture, then apply to stain in light strokes working from the outside towards the center of the spot, letting strokes taper in every direction to prevent a ring forming. Blow on spot as you work to hasten drying process. Change absorbent pad and sponge cloth frequently. When applying solvent to colored materials, use a sponge of the same material, if possible.

Bleaches

Substances that whiten or remove color. Sunlight is the simplest and safest of all bleaches but is not always on tap. Other bleaches are lemon juice, lemon juice and salt, acetic acid, ammonia, borax, Javelle water, oxalic acid, peroxide of hydrogen, potassium permanganate, sodium hydrosulphite, sodium thiosulphite. Many of these bleaches are chemicals and when used, the work must be done as rapidly as possible.

Choose one of these two methods when using chemicals to remove stubborn stains:

Bowl Method: Stretch the material over a bowl of lukewarn water, holding it in place by elastic band. If the agent you are using is soluble in water the stained material should first be moistened with water before applying the agent with a medicine dropper to the spot. Use separate medicine droppers for acid and for alkali solution. If acid solution is applied first, follow immediately by alkali solution - or vice versa. After the spot has been removed, rinse material thoroughly.

Rod Method: Place stained portion on absorbent pad. Apply alkali and acid with glass rod with blunted ends. Rinse thoroughly.

RINGS - THEIR CAUSE AND CURE

Rings appear for various reasons: The chemical may tighten the fibers causing a change in texture. Dressing in the fabric may run back to the edge of the damp portion and be deposited there as the fabric dries. A third reason may be that the stain has not been fully flushed out. Maybe too much solvent has been used, or the solvent has not evaporated quickly enough.

To Avoid Rings

1. Use light strokes, working from outside stain to center and spread or "feather" the liquid into the fabric surrounding the treated section until there is no definite edge where the material dries.

2. Do not use too much solvent at a time.

3. Blow on stain when working. Brush material with a dry rag. Finish drying process by hanging material in stiff breeze or before electric fan.

4. Use the same type of material for sponge as the stained material.

5. Work rapidly, but get all the stain out.

To Make Water Rings Disappear:

1. Turn material right side up and rub edge of the ring lightly with fingernail, edge of spoon or coin, or rub material between two hands.

2. Steam out. Put a small quantity of water in a tea kettle, tie a piece of cheesecloth over the spout. Allow water to come to boil. Hold ringed spot over the spout until it is moist. Shake dry, and press. The cheesecloth prevents water from escaping from teakettle and spotting the fabric.

TOWARD A FIRST AID CLEANING KIT

This list may be contracted or expanded depending on how thoroughly one is going into the spot removing game. Some of the materials are poison. They should be clearly marked and kept in a safe place.

Absorbent cloths
White blotters
Medicine droppers
Glass rod rounded at both ends
Medium size bowl
Soap
Ammonia - 10 percent chemically pure ammonium hydroxide. Do not use ordinary household ammonia. For delicate fabrics dilute to half strength.

Potassium permanganate (bleach). Mark poison. Buy potassium permanganate from drugstore in crystal form. Prepare solution by dissolving one teaspoonful of crystals in a pint of water. Apply to stain with medicine dropper, allowing it to remain on fabric for about five minutes. It will leave a brown stain which on linen, cotton, and silk should be bleached out with oxalic acid, on wool by peroxide of hydrogen. Rinse material thoroughly.

Oxalic acid solution (bleach). Mark poison. Use for removing brown stains left by potassium permanganate used on cotton, linen, or silk. Buy from drugstore in crystal form. Dissolve as many crystals as possible in lukewarm water. Keep in tightly corked bottle. Apply with medicine dropper or glass rod. Never allow it to dry on fabric. Rinse first and then neutralize acid with solution of ammonia. Always rinse material thoroughly.

Javelle water (bleach) will remove color and will injure silk and wool, but is excellent for some stains on white cotton and linen. Make by dissolving 1/2 pound of washing soda in one quart of cold water. Then add 1/4 pound of chloride of lime. Filter to remove sediment. Javelle water should not remain in contact with a fabric for more than a minute. Use bowl method, applying fluid by medicine dropper. Always neutralize spot with dilute acid solution and rinse material thoroughly. Keep the clean liquid in tightly closed bottles.

Acetic acid solution - for neutralizing Javelle water. Make by adding 2 tablespoons of a 5 percent solution of acetic acid to a quart of water. After use - rinse material thoroughly.

Hydrogen peroxide - Buy hydrogen peroxide used for medical purposes, alkalize it just before using with a few drops of ammonia. Apply with medicine dropper or glass rod. This mild bleach may be used on silk and wool as well as cotton and linen. It affects some colors and should always be tried before using it on dyed materials. Always rinse material carefully in water.

Glycerine - for tea and coffee and fresh peach stains.

Carbon tetrachloride - grease solvent, noninflammable.

Turpentine - removes paint stains.

Hydrosulphites (bleach) particularly good for removing dye stains. Comes in powdered form. Keep in dry tightly closed cans and do not moisten until ready to use. Then the powder may be moistened and worked directly on the stain, or may be dissolved in water - one teaspoonful to a cup of water. These compounds are especially good in removing a great many stains that are not greasy in nature.

Use on colored materials only after experimenting. Treatment on colored fabrics must be very rapid and the material must always be rinsed thoroughly.

Fuller's earth (absorbent).

SPOT PRESCRIPTIONS

Your guide to the best methods and remedies for spot removal.
Tack near your cleaning cabinet or kit.

ALL SPOTS 1. Analyze the stain. A complex stain may require the use of 2 or more cleaning agents. 2. Remove stain when it is fresh. 3. Use cleaning agents that will not injure materials. 4. Experiment with a cleaning agent on unexposed portions of material first. 5. Use agents sparingly, work rapidly. For more tips, write to the Superintendent of Documents, Washington, D. C., for Farmers' Bulletin No. 1474, "Stain Removal from Fabrics," 5 cents.

ACIDS

If the fabric is washable, acid spots should be rinsed at once in a generous amount of water to check the action of the acid. To neutralize acid spot:

1. Apply a weak alkali to the spot. If the stain is slight, sometimes holding it in the fumes from a bottle of household ammonia is sufficient, otherwise apply dilute ammonia solution directly. If ammonia causes color change in fabric apply white vinegar.

2. Baking soda. Sprinkle on both sides of moistened material. Let stand till effervescence stops. Rinse thoroughly.

ALKALI

Spots should be removed at once with water or mild acid solution such as lemon juice, vinegar, or acetic acid. After application rinse material thoroughly.

BLOOD

Always use cold water on blood stain first.

Washable cotton and linens: soak in cold, wash in hot water.

Delicate fabrics: sponge with cold or lukewarm water. To remove last traces of blood stains, sponge with hydrogen peroxide to which a few drops of ammonia have been added.

Heavy materials: (blankets, etc.) Make a paste of raw starch and cold water. Apply to stain and brush off when dry. Repeat if necessary.

BUTTER AND BUTTER SUBSTITUTES

Always scrape off with blunt instrument as much of grease as possible.

Washable materials: Soap and hot water.

Other materials:

1. Carbon Tetrachloride - pad method.

2. Fuller's earth. Put absorbent powder on both sides of material, allow to stand 1/2 hour, then brush off powder. Repeat if necessary.

CANDLE WAX

Scrape off as much wax as possible.

Washable materials: Rub spot with cold lard or turpentine, wash in warm suds.

Other fabrics: Place blotters on both sides of stain, press with warm iron, remove remaining grease with carbon tetrachloride or other grease solvent. If any color is left, sponge with denatured alcohol.

CHEWING GUM

Alternate treatment with carbon tetrachloride and water, or rub spot with ice.

CHOCOLATE AND COCOA

Washable materials: Soap and hot water. For remaining stain on white linen and cotton use Javelle water. For colored materials if dye is fast, soak stained portion in wood alcohol made alkaline with ammonia solution.

Non-washable materials: Carbon tetrachloride, pad method. For remaining stain, sponge with hydrogen peroxide.

COFFEE

Remove stains while fresh. It's much easier.

Washable cotton and linens: Pour boiling water on stain from a height of 2 or 3 feet.

Old stains may be bleached with potassium permanganate and oxalic acid - bowl method.

All colorfast fabrics: Moisten spot with warm glycerine. When spot disappears wash out glycerine in warm suds.

Non-washable materials: Apply glycerine, pad method, then steam out glycerine.

If it is a cream-coffee stain, use carbon tetrachloride or other grease solvent first.

DYES AND RUNNING COLORS

Ease with which dyes can be removed depends on the nature of the dye. Hydrosulphites are most satisfactory for general purposes. (See kit directions on page 4.)

Dye stains may sometimes be removed by soaking in warm or cold water 10 or 12 hours, then bleaching in the sun.

For white wool and silk: Soak in hydrogen peroxide solution made slightly alkaline with ammonia solution. Rinse thoroughly.

EGG

Cold water first. (Hot water hardens egg stain making it difficult to remove.)

Washable colorfast materials: Follow cold rinse by washing in hot water.

Other fabrics: Sponge with cold water. Allow stain to dry, then use grease solvent, pad method.

COOKED FRUITS AND BERRIES

Do not use soap; it is apt to "set" the stain.

Washable colorfast materials:

Fresh stains - boiling water from a height.

Old stains:

1. Bleach with Javelle water (use on white cotton and linen only).

2. Alternate treatment of oxalic acid and ammonia. May be used on other fabrics if carefully done. Experiment first.

FRESH FRUITS AND BERRIES

Washable cotton and linen:

1. Boiling water.

2. Moisten stain with lemon juice. Put in bright sunlight.

3. Oxalic acid, ammonia solution, boiling water - bowl method is effective for blue-gray stain which does not come out with boiling water.

Silk and wool and colored fabrics:

Spread material over bowl of hot steaming water to which a few drops of ammonia have been added. Apply hydrogen peroxide with medicine dropper at about five minute intervals. This treatment may fade colors. Experiment first.

GRASS, DANDELIONS, OTHER FOLIAGE

Washable materials: Hot water, soap, rubbing stain vigorously. On white cotton and linen bleach out remaining stain with Javelle water or potassium permanganate.

Other fabrics except acetate rayon: Use ether or wood or denatured alcohol, pad method. (Alcohol affects some dyes. Experiment first.)

GREASE AND OILS

Always scrape off as much grease as possible from stained material then use one of three methods, depending on nature of fabric.

Washable materials: Warm water and soap. Soap containing naptha or kerosene is especially efficient.

Other methods:

Absorbents are effective only on oil and grease spots that are not mixed with dirt or metal. They are convenient to use on rugs and other heavy materials.

Delicate fabrics: 1. Spreading paste of white absorbent powder and a solvent is effective in removing a spot from light colored unwashable materials.

2. Carbon tetrachloride or other grease solvent, using pad method. To prevent grease spreading use small quantities of solvent at a time. Rub spot with clean cloth until thoroughly dry.

INDELIBLE PENCIL

White cotton and linen: Javelle water.

Other materials: If stain has not been moistened with water, soak in denatured wood alcohol. Sponge out remaining marks with soap and water.

INK

(Chemical composition of inks vary. Some are impossible to remove.)

Marking ink (silver nitrate type which must be exposed to sun or ironed before articles which are marked with them are washed).

For white cotton and linen: Javelle water - bowl method. Then soak in ammonia solution.

Printing Ink:

Washable materials - soap and water; rub thoroughly, or rub lard into stained fibers and then use soap and water.

Delicate fabrics: Soak for a few minutes in turpentine, sponge out with chloroform, ether, or wood alcohol. (Turpentine may affect some dyes. Do not use before experimenting.)

Writing Ink: Try several methods. Start with the simplest and one the least likely to injure a fabric.

Absorbent: Work absorbent around with blunt instrument. Renew absorbent when it becomes soiled. When ink no longer comes up with dry absorbent make it into a paste with water, and apply again.

Soap and Water: Often satisfactory, if material is washable.

Milk: Soak stains for a day or two, changing the milk as it becomes discolored. (Raw milk is more effective than pasteurized milk.)

Oxalic Acid: Soak stains for a few seconds in a saturated solution of oxalic acid, rinse in clear water and then in water to which a few drops of concentrated ammonia has been added.

Potassium Permanganate: (See kit directions on page 4.)
It may be used for many delicate materials.

Javelle Water: On white cotton and linen only.

Commercial Ink Removers: Follow directions carefully and after treatment thoroughly rinse material.

Sodium Perborate: Effective in removing some red ink stains. Soak stain for one or two days if necessary in cold saturated solution.

IODINE

Remove when fresh - it's much easier.

Washable materials: Soap and water will remove fresh stains.

Other Fabrics:

1. Denatured or wood alcohol, pad method. (Affects some dyes. Experiment first.)

2. Sodium thiosulphate ("hypo") or a solution of sodium sulphite. Immerse stain in a solution containing 1 tablespoon of this chemical to 1 pint of water.

IRON RUST

White materials:

1. Put stained fabric over bowl of boiling water, squeeze lemon juice on the spot. Allow juice to remain for a few minutes. Rinse. Repeat the process.

2. Sprinkle the stain with salt, moisten with lemon and place in the sun. Add more juice if necessary.

3. Tartaric acid: Boil the stained place in a solution of 1 teaspoon of the acid to 1 pint of water until the stain disappears. Rinse thoroughly.

Colored materials: One of the above may work, but experiment first with unexposed portion of material.

LEAD PENCIL

Washable materials: (except wool) soap and water vigorous rubbing.

Delicate fabrics: Immerse stain, place in small bowl containing chloroform or other organic solvent. Brush gently with soft brush or cloth.

Stiff and starched materials: soft eraser.

MEAT JUICE AND GRAVY

Remove protein spot with cold water, then use grease solvent, pad method.

MILDEW

(Mildew spots must be treated when fresh if injury to the fabric is to be avoided.)

1. Soap and water and drying in the sun will remove them.

Washable fabrics:

2. Slight stains: soak in sour milk overnight, bleach in sun, or moisten stain with lemon juice and salt and bleach in sun.

3. Old stains on white linen and cotton: bleach out with Javelle water.

MUSTARD

Washable materials: Soap and water.

Delicate fabrics: Warm glycerine or hydrosulphite.

PAINTS

Oil Paints, Varnishes, and Enamels -

Washable materials:

Fresh stains:

1. Soap and water and vigorous rubbing.

2. Turpentine - either sponge stain or wash, whole article in solvent.

Old stains:

1. Rub lard into the stain. Then wash with soap and water.

2. Moisten stain with ammonia solution. Sprinkle with turpentine, roll article up for 15 to 30 minutes. Soak for several hours then wash with warm soap and water.

Delicate fabrics: Sponge or soak entire article in carbon tetrachloride, chloroform, or benzol.

Alcohol Paints or Stains -

Fresh stains:

Washable materials: Soap and water.

Delicate fabrics: Wood or denatured alcohol, pad method.

Old stains: Soak stain for half an hour in strong ammonia then wash.

Water Color Paints:

Washable materials: Soap and water.

Delicate fabrics:

1. Sponge stain with turpentine to remove water color, then with benzol to remove turpentine.

2. Dip in gasoline.

3. Sponge with glycerine then with lukewarm water.

SCORCH

Washable cotton and linen: Wet spot with water and expose to sun as long as necessary.

Any white fabric: Dampen a white cotton cloth with hydrogen peroxide and place over the stain. Place a clean dry cloth over it and then press with a medium warm iron. Caution: do not iron directly on the cloth moistened with peroxide. Rust stains on the garment would be the result.

Woolen material: brush lightly with emery paper.

TAR, ROAD OIL, AXLE GREASE

Washable materials:

1. Sponge or immerse in carbon tetrachloride, then launder.

2. Rub lard thoroughly into stain and wash with hot soap and water.

Other fabrics: Carbon tetrachloride. Immersion or pad method.

Carpets: Scrub with cloth soaked in solvent.

CONSUMERS' GUIDE Separate No. 40-M

UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMERS' COUNSEL DIVISION
WASHINGTON, D. C.

TIPS FOR RUG BUYERS

Knowing weave, construction, amount, and kind of wool are first steps toward getting your money's worth when you buy pile rugs.

From the plateaus of Tibet to the hills of Scotland, from the mountains of India to the crags of Iceland, shepherds follow their flocks of sheep year in and year out. As they have done for centuries, once a year or once every 6 or 8 months they collect their wool harvest and sell it to traders. Then it is shipped to the ports and markets of the world.

Sheep that scramble nimbly up a precipice have a vested interest in the parlor scenes of Indianapolis, London, and Shanghai. Without sheep there would be no wool for the great Jacquard looms, the Axminsters and the velvets, or the deft fingers of the Oriental weaver. The homes of the world would not have carpets and rugs as we know them today. Any story of carpets and rugs begins with the shepherd and his flock.

Wool — for rug purposes — must come off the backs and flanks of sheep raised in more rugged climates than our own. Rug wool must be tough, with lots of spring and firmness to it, not soft and fluffy. Because American sheep don't have the wool coats necessary for rug manufacture, the wool must come from foreign sources.

But the cotton boll from America's South also has a star role in the making of a rug. The American farmer sells some 20,000,000 pounds of cotton a year to the Nation's rug makers. Strong and sturdy, cotton yarns go not to the surface of the rug, but are buried underneath in the highly important job of binding the rug yarns together, giving the rug firmness and durability. They form the foundation network of the rug, allowing the more expensive wool fiber to appear almost wholly on the rug surface. Jute — and sometimes linen — also spread their tentacles beneath the surface of the rug to give it "body."

Wiltons and Axminsters trace their name origins back to the end of the 17th century when Louis XIV drove the Huguenots out of France. Some of these 17th century refugees fled to the towns of Axminster and Wilton, in England, which even today have great industries devoted to the manufacture of rugs. Unfortunately for Louis, he lost many of his master rug weavers and a flourishing rug industry. France made it up a century later by giving to the world Joseph

Marie Jacquard, who invented the modern mechanical loom that revolutionized the carpet industry. At the end of this historical journey is a consumer -- somebody with a pocketbook but possessed, probably, of as much knowledge of the quality of rugs as of sheep raising in the Himalayas.

Consumers enter the picture when the rug -- the product of weaving together wool, cotton, jute, and other yarns -- is laid before them along with a lecture on style, beauty, and perhaps a word on durability. Selection of color and design are important if rugs are to serve their aesthetic, as well as practical, purposes. But rug labels and rug ads that tell everything about style and nothing about quality may lull consumers into thinking that rug quality is something that you take for granted. Top question on the lists of most consumers who must make every dollar serve practical purposes first, is this one: "How will the rug wear?"

Rug wear has almost as much to do with its care as it does with the structure of the rug itself. On page 8 we digest the more important rules that should be followed by consumers anxious to get the most out of their rug. To these might be added another tip.

Laying a rug on the floor and leaving it in the same position forever after may soon give you a rug that is as good as new in some spots and worn to the floor in others. This is because the amount of "traffic" on the rug is heavy at entrances, or near a dining table, or around a chair that is the family favorite. Soon, in these places, the pile begins to crush or streak, and it isn't very long before wear begins to show. To avoid this, "balance" the wear on the rug by shifting it around every 6 months so that all sections of the rug have a turn at the more traveled parts of the room. In this way you may get many more years of wear out of the rug.

Do not be worried by "fluffing" of a new rug or "shooting" of an individual strand of yarn. "Fluffing" — in which the carpet sheds a large amount of wool "fluff" — may cause you to fear your rug is slowly disappearing up your vacuum cleaner or carpet sweeper. It is a baseless fear. Though the "fluffing" may continue for several months, the amount of wool lost never amounts to more than a hundredth of 1 percent of all the wool in the carpet, according to one expert.

"Shooting" of a fiber — where a few loose ends appear on the rug surface -- is also a minor problem unless the condition becomes general, in which case you have a just cause for complaint. Simply clip the protruding yarn so that it is level with the rest of the rug surface.

One other tip for rug care has to do with the matter of a mat. "Should I spend the few extra dollars and get an underlay for my rug?" you ask yourself. The answer is, decidedly yes, if you want to get the most wear out of it.

Experts at the National Bureau of Standards found that by placing a mat under a rug, the wear may be increased anywhere from 73 percent

to 146 percent. Though every type of rug showed better durability, those with a short pile had the greatest percentage of increased wear because of the underlay. Thick resilient pads are better than the thinner kinds, the researchers found.

But as conscientious as you may be about the care of your rug, it can be all in vain unless you know what a good quality rug looks like in the first place.

Consumers can't be walking encyclopedias of technical information when they go to buy a rug. That is what they would have to be if they expected to identify quality in a rug for themselves. First they would have to know the weave of the rug, then the type and quantity of materials in it, then the firmness of its weave, and a dozen other facts like these.

In the absence of such information, the only protection the consumer has today against defects in rug quality is to buy from reliable manufacturers who "stand back" of their products. Specific guarantees against the rug's wearing out within a minimum number of years come only in higher-priced rugs beyond the reach of most consumer incomes. Informative and easy-to-understand rug labels are a consumer frontier not yet reached. Blame this not so much on consumers who may have been lax in asking for proper labels, as on the fact that research in rug laboratories has not yet reached the point where tested standards for rug quality can be set up. Scientists in public and private laboratories are working toward the day when reliable and tested quality information will be available to consumers on rug labels. Such information may take the form of grades or it may be in the form of specific facts about the rug structure. But it will recognize that rugs — like most consumer products — have a range of quality that makes them good, bad, or mediocre, and consumers will be able to use this information in deciding what quality rug they want, just as today they can buy meats and eggs and other products on the basis of grades. Today rug labels with quality grades are still part of the unmapped consumer no-man's land.

A rug trade association has done some trail-blazing of its own in setting up label standards for telling the consumer the wool content of the pile (or surface) of a rug, the size of the rug, and best methods for care and cleaning. Aimed principally at misrepresentations that might amount to frisking the rug buyer's purse, the label provisions enable the consumer to know when he is getting a 100 percent wool pile in the rug he purchases. This does not mean the label must tell the amount or quality of wool in the pile. What it does mean is that rug makers who have nothing to hide, who don't mix in other fibers with wool in the weaving of the rug surface, and who don't want to pass off a cotton pile rug as wool, can put on their labels "100 percent wool pile." So far, wool stands alone as the most durable of rug piles. Other fibers -- cotton or rayon -- while they may look attractive, soon mat down and soil much more easily than wool.

No Fair Trade Practice rules have been issued for the rug industry, although the Federal Trade Commission has ruled, in a decision

upheld by the courts, that a rug labeled "Wilton" must actually be a Wilton weave and nothing else. Of Wilton and other weaves we give information below.

With informative labels lacking, the first caution on consumers' lists should be never to judge a rug by the type of its weave. Time was when this sort of thing worked, and there was almost a hierarchy of rug qualities, based on their weave. But today rug weave is neither an indication of rug quality or rug value. "The use of the names of weaves as a quality characteristic is a 30-year-old delusion and snare from which reputable manufacturers are trying to protect the consumer," is the way one outstanding rug engineer puts it.

To know rug quality consumers must become experts in "feeling" the fabric, judging its flexibility, ruggedness, and density, and the firmness of its weave by handling it. This requires practice, to be sure, but knowing a little about structure of the different weaves partly reduces the guesswork.

First, then, some information about the more common weaves.

Wilton: This is so constructed that for each color in the pattern there is a separate wool yarn woven in the rug. If there are three colors in the pattern, three separate wool yarns form the rug pile (or surface). If a Wilton pattern is blue, red, and yellow, for example, a blue yarn, a red yarn, and a yellow yarn are used to weave the pile. When a selected color appears on the surface -- red, for example -- the other two yarns are woven in the body of the rug. When blue is called for, the red and yellow yarns in this case are buried in the rug, and so on. By an intricate and ingenious loom, called the Jacquard loom, an artist can design a rug with as many as six different colors in it, and the machine will reproduce that design exactly on the surface of the rug. The quality value of a Wilton lies in these buried woolen yarns; they increase the rug's back thickness and its ruggedness and may increase the wear of the rug. The added cost for these added yarns may buy more rug luxury, but it is an expensive way of buying rug durability.

A Wilton rug usually has a short pile. The rugs are usually figured, have at least two colors in their pattern, but more often have four or five different colors, each one woven with a separate yarn. They have flexible, tough backs. The design is clear-cut and distinct, with no blurred outlines.

Brussels weave is the same as a Wilton but has a loop-pile rather than a cut-pile. It is rarely seen today.

Axminster: This is the most popular of all rugs. It can be easily identified -- particularly in the lower-priced brackets -- by pronounced ridges on its back, and by the fact that you can roll it lengthwise, but not crosswise. Most of the wool of the Axminster is on the surface. There is no limit to the number of colors that may be used in the design -- an important consideration for consumers with an eye to style. You can usually be confident that a multi-figured rug with heavy ridges on its back is an Axminster weave.

Velvet: This is the simplest type of weave, and the better grades are very durable. Most solid-colored rugs are of velvet construction. Economy comes with durability in plain weaves, because mass production methods have lowered the manufacturing costs. Velvets rank second as favorites on the American rug market. There are not as many figured, as plain, velvet rugs and carpets. There are, however, durable grades usually of low pile construction.

Tapestry rugs, in very little demand these days, are the same as velvet construction, except that the pile is formed of uncut loops. But there is an infant boom market in the making of velvets similar to tapestries such as the "looped pile" velvets. The big consumer advantage of these is that they get away from shading.

Biggest rug fallacy of all is that "broadloom" is a type of weave, a standard of quality, or a trademark of excellence. The term "broadloom" on a rug means nothing so far as the quality of that rug is concerned. It simply means that the rug has been woven on a broad loom -- as wide as 18 feet -- and is seamless. Any type or quality of rug may be broadloom. The term used in advertising often refers to the solid color velvet types.

Knowing the weave, the next step is to know quality and durability of the weave. Consumers should not make the mistake of putting down as a rule of thumb that rug weave has something to do with rug quality when they go to buy. It is possible to get high and low quality in all types of weaves.

The difference is not in the weave but in the construction and methods of manufacture of the rug itself.

That brings you head-on to the question: What makes rug quality?

First, the amount of wool in the rug. The more wool in the rug, the higher is its quality, all other things being equal.

Ask whether the wool in the rug is worsted or plain. If it is worsted, chances are that the price tag of the rug is high. But worsted rugs look well and wear well for those who can afford to buy them.

Sometimes rugs are treated with chemicals to impart a luster to simulate Orientals or antique rugs. While such treatment enhances the beauty of the rug, it may result in damage to the wool fibers, weakening them, and lowering the durability of the rug. Methods of treating rugs to give them "luster" have been developed to minimize this damage.

Second factor of rug quality is its construction underneath and on the surface. The pile of a rug -- or the surface formed by hundreds and hundreds of little tufts of wool -- is fastened to the foundation by jute or cotton yarns called "filling." These yarns primarily add to the firmness of the backing, and the more firm and flexible the rug back, the tighter and better woven these filling yarns are. This in turn adds to the general durability of the rug.

The rule is to take the back of the rug firmly in your hands, pull it, examine it closely to see if the firmness comes from tightly woven yarns or merely from sizing or artificial backing put into the rug to make up for a weak, loose weave. If the rug back feels sleazy, or thin, or if it lacks firmness and an elastic kind of pliability, the odds are against its being a high quality rug.

On top of the rug, durability is determined first by the density of the pile; second, by the height of the pile.

Density of the pile, National Bureau of Standards experts have found after exhaustive tests, tells more than anything else about rug quality.

By density is usually meant the amount of wool in any unit area of the pile — say a square inch. So far no standards have been developed for expressing the quality of a rug by its wool content. Because even if two rugs had the same amount of wool in their pile, their durability might not be the same. This is because wool qualities vary, wool blends are different with every manufacturer, and methods of weaving the wool might have something to do with the quality of the rug.

For the consumer to estimate the density of a rug it is necessary to determine the number of wool tufts in each square inch. To get this number of wool tufts in each square inch you must know the pitch of the rug and the number of wires it has.

Pitch of the rug means the number of tufts per inch across the width of the rug. You can count these on the surface of the rug, but easier to count are the number of little squares on the back of the rug, each of which represents a tuft. Be sure to count these in the width.

Wires means the number of rows of tufts per inch in the lengthwise direction. Again it is usually easier to count these on the back of the rug.

To get the number of tufts in each square inch, you multiply the pitch number by the wires number. If the pitch is 7 and the wires 8, the rug has 56 tufts per square inch. Unless one knows the size of the yarn used, the number of tufts does not accurately reveal the amount of wool per square inch. Consequently it is only a measure of the closeness of the backing construction and does not always give any hint of the surface durability.

Height of the pile is important. It is a rule, that, other things being equal, the higher the pile of the rug, the longer it will wear.

Establishing standards for density, size of yarn, and pile would be a simpler way of setting up a consumer buying guide for rugs than letting the consumer guess at these things for himself. Such scientific standards are still in the laboratory stage. But some day consumers may be able to buy rugs according to simple standards.

National Bureau of Standards scientists have developed a "wear testing machine" for measuring wear on rugs. Still in its experimental

stages, the machine — used by most rug makers in their own laboratories — in a few days can show how a rug will wear over a period of years. Rug buyers of the future may find that a rug label will tell them how samples of that rug stood up under tests of the perfected machine.

Such a test was made on two rugs. Rug A sold for $6.85 a square yard, rug B for $5.25 a square yard. It took 300,000 revolutions of the wear-testing machine to wear the pile off rug A, and 75,000 revolutions to wear down rug B. Those figures on a label would tell a consumer that by paying one-third more for rug A, he could get a rug that would wear 3 times as long as rug B. Of course, consumers should not take this to mean that as an absolute rule a rug priced slightly higher than another rug will have many more times the wear of the lower-priced product. Sometimes this may be true, but until tests for wear reach the perfection stage, consumers will have no way of knowing this fact merely by looking at the price tag.

The National Bureau of Standards, in cooperation with a number of rug manufacturers, has laid down in a large Washington building a whole corrider full of rugs of different quality. One million pairs of feet have already passed over those rugs, and some of the rugs are beginning to show signs of wearing out completely. When this experiment is completed, the Bureau experts will be in a better position to say whether the results obtained from the wear-testing machine are comparable to actual use tests.

There is a point reached in the making of a rug where added cost means you are paying for luxury, for the luxury of deep, thick pile, for the luxury of a rich finish, for the luxury of exotic design and shadings. These higher priced rugs may wear more, of course, but dollar for dollar, if you are after durability, you will save more by buying in the medium or lower-priced ranges.

Learn the "feel" of a rug. Ask the salesman to show you two similar weaves but of different price. Dig your finger into the pile. Does it feel high? Is it thick? Is it hard to feel the foundation threads? Is the rug flexible, rugged, and sturdy? Are the yarns smooth and soft, and do they show spring and lots of "life?" If these things are true, then you have a good rug. A poorer rug will feel less sturdy, won't have a thick pile, and you will be able to feel the foundation with your finger tip. The yarns will be coarse and feel "thin" and sparse. A few tests like this, and you soon will be able to distinguish a good rug from a poor one.

On an Axminster rug, count on the back of the rug the rows of tufts per inch. Four rows means it is of good quality, will serve you well, and will be low in price. For about twice as much, you will be able to buy an Axminster with seven rows to the inch. This rug will wear far more than twice as long and will be well worth the investment if you can afford to spend the extra money. This is true of Axminsters only, but if you buy a rug only once over a long period of years, it will pay you to put out the extra cash and get a rug that will be durable and long-lasting.

With velvets it is not so easy to determine the quality aside from the "feel" of the rug. But remember that if you are after long wear and are not so concerned with appearance, then a plain colored velvet is quite likely to give more wear per dollar than the figured types.

Likewise, if you choose a Wilton, dollar for dollar, you will get better quality in a Wilton with only two colors in its pattern than one of the same price with four or more colors in the pattern. Here again you make your choice of durability as against beauty and appearance.

Generally then, a good rug should be firmly woven, with no excessive sizing or filling in the body. The tufts should be closely spaced; there should be no wide gap at the base when you bend the rug between two rows of tufts. Pile should be upright, sturdy, should resist pulling, bending, and crushing. Rubber or composition backing sometimes makes the rug stronger, but be sure inclusion of these does not sacrifice a tight and flexible firm weave. And finally, look for a rug with a label that tells you something about construction as well as design.

AFTER YOU BUY A RUG . . .

As important as wise selection of a rug is its care. Rug labels that give the consumer complete directions for cleaning are something to look for when you buy. Here are some tips on rug cleaning and care:

Dirt: It is a rug's greatest enemy. To check, use a vacuum cleaner once a day on traveled areas; give the rug a complete vacuuming once a week. Vacuum cleaners equipped with both suction and a brush or beater are most efficient. Carpet sweepers remove only the surface dirt from the rug. Hard sweeping with a broom usually drives more dirt into the rug than it takes out. If you do use a broom, choose one with soft bristles. Clean a rug in the direction where the pile lies. Brush the pile lightly when you have finished so that it will lie all in one direction.

ever beat a rug; this may snap the fibers and loosen the foundation. Shampooing the rug at home -- unless the rug is a small one -- is also bad practice. Send it to a reliable and experienced professional cleaner. So-called "dust-cleaning" may be injurious to the rug unless done by a reliable dealer who assures you the rug will not be subjected to severe beating.

Moths: Best check is regular vacuuming. Paradichlorbenzine sprinkled over the rug for a few days is a fair remedy; better is to have the rug professionally cleaned. "Clothes Moths" Leaflet 145, free from the Department of Agriculture, Washington, D. C., gives moth remedies.

Stains: Don't attempt to remove until you have learned from the maker of the rug how various solvents will react on the dyes. A going-over with a cloth dampened with carbon tetrachloride may remove spots caused by ordinary dirt. "Stain Removal From Fabrics," Farmers'

Bulletin 1474, free from the Department of Agriculture, Washington, D. C., tells how to get rid of specific stains. CONSUMERS' GUIDE for May 9, 1938, also has this information.

Pile bending or crushing: Steam the pile by placing a wet cloth over it and applying a hot iron. Then brush pile in its natural direction. This is the simplest household remedy for pile crushing, which shows up particularly in the form of "streaks" on plain-colored rugs.

Holes, tears, etc.: Can be repaired by expert weavers. Be sure the yarns have been properly matched by securing them direct from the manufacturer of the rug.

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UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMERS' COUNSEL DIVISION
WASHINGTON, D. C.

WHAT'S HAPPENED TO MEAT PRICES

MEAT PRICES have made headlines in recent weeks. During August and early September most kinds and cuts of fresh meats scored large increases in retail price. Later in September some of these prices went down much, others a little.

Various explanations have been offered by different observers, but unfortunately the careful researcher of statistics will find no positive evidence with which to justify all the increases or to condemn any particular increase in any one city.

Meats usually are a fairly expensive form of food, but most consumers are willing to pay something extra for them as a savory and palatable addition to the family table. Over the past 15 years meats as a whole have become more expensive. That is to say, their prices have been going up more or going down less than the average of all food prices. This has been particularly true of beef. It is not true of pork this year. Leg of lamb, during these years, has been getting a little cheaper, chickens a little more expensive.

Right now, more interest hangs on more recent happenings. It is quite usual for beef and pork prices to move up in August and to reach a seasonal peak in September. Hog supplies are low then. The supply of cattle is approaching its seasonal high, but often is not large enough especially in the better grades, to take care of the sudden appetite for a good steak or roast with which consumers celebrate the first cool weather and the end of summer menus.

This year the seasonal flurry assumed major proportions. Here is the story meat by meat.

Beef prices for chuck, rib roast, and round steak in 51 cities appear to have gone up 2 cents a pound between the middle of August and the middle of September. Probably these mid-month reports furnished by the Bureau of Labor Statistics on "good" quality beef will not show the full amount of the seasonal increase. From the New York City Department of Markets, where average retail prices for 7 beef cuts of "very good" quality are reported each week, we learn that, from the first week of August to the first week of September, two cuts of beef went up 8 cents, and 5 others went up 5, 6, or 7 cents a pound. The larger increases were in the higher-priced cuts. By the end of September, in the New York City reports, not quite half of this seasonal rise had been canceled by declines later in the month. At the end of September 2 cuts were 4 cents higher than a year ago, one was 3 cents higher, 2 were 2 cents higher, one was one cent higher, and one was at the same price as in 1939.

Fresh pork prices in the 51 cities appear to have gone up on the average 1½ cents between mid-August and mid-September. In some cities they went up more than that, others they went down. In New York City the whole seasonal increase was 9 or 10 cents a pound, followed by sharp reductions which, by the last week of September, left prices 2 and 3 cents higher than in early August. Reports from the 51 cities and from New York City indicate that fresh pork at retail in the latter part of September was at about the same or a little lower level than a year ago.

Smoked pork products did not go up and down in price appreciably during this period and have been considerably cheaper than last year--3 or 4 cents a pound cheaper.

Lamb prices seem to have gone up less than a cent a pound in the 51 cities between mid-August and mid-September. But the New York City weekly reports, showing the whole seasonal movement, record increases ranging from 4 cents a pound on cheaper cuts to 11 cents a pound on more expensive cuts. By the end of the month the cheaper cuts were 2 to 4 cents higher than at the beginning of August, but the more expensive cuts were lower than when the seasonal rise began. Compared with a year ago lamb prices appear to have been about the same in the latter half of September as at that time in 1939.

While retail beef prices in New York City were going up 5, 6, 7, and 3 cents a pound, prices paid for live cattle in Chicago advanced as follows: prime and choice grade, 1-3/4 cents per pound (live weight); good grade, almost 1½ cents; medium grade, about one-half cent; common grade, about a cent.

Retail prices go up, or down, more than cattle prices because it takes more than 2 pounds of live animal to make a pound of beef for the consumer. The retail cuts for which prices are reported represent only a part of the beef which a butcher sells. However, it appears that these retail increases at their top had run ahead of the increased prices of live cattle. This is confirmed by the fact that retail cuts at the end of September had shed off almost half of their earlier increase, although cattle prices had declined only slightly.

Many lessons for consumers who aim to be smart when they buy meat may lie hidden in such statistics. Two, however, are not hidden but stand up and stare them in the face.

Lesson 1 has to do with the quality grades of beef. When beef prices begin to move around, high-grade cattle which yield high grades of beef may change their prices up or down more rapidly than low grades of cattle yielding low grades of beef. Market prices for the live animals are reported on different grades of cattle. Retail prices are not reported for different grades, largely because it is hard to find out what grade of meat is sold in retail markets.

Judging by prices of medium and low grades of cattle, retail prices of medium and low grades of beef probably did not go up much in August and September. Consumers who wanted beef, but could not afford the extra 5 to 8 cents a pound which better quality beef cost, could have switched to lower grades. A caution here is that prices of lower grade beef may not be as low as they seem when allowance is made for the greater losses due to bones and to shrinkage in cooking.

Lesson 2 is in cuts of beef. Larger increases occurred in the prices of more desirable cuts. This will usually happen when beef prices are going up. The lesson for money savers is to try cooking the cheaper parts of the carcass and make them tasty. They are equally nutritious. In the next issue CONSUMERS' GUIDE dissects the carcasses of beef, veal, lamb, and pork, telling how the different cuts can best be used and how much edible meat you are likely to get from a pound of each cut.

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UNITED STATES DEPARTMENT OF AGRICULTURE
CONSUMERS' COUNSEL DIVISION
WASHINGTON, D.C.

RELIEF MILK PROGRAMS

WHAT THIS COUNTRY NEEDS, an expansive Vice President once said, is a good 5-cent cigar.

Under different circumstances, the director of the public relief agency in New Orleans arose during a meeting in one of the ballrooms of a downtown New Orleans hotel and said, substantially, what this city needs is a 5-cent quart of milk.

The relief director wasn't catchphrasing or wisecracking. "Most of the people on relief in New Orleans are there because of undernourishment. I would say that if we went back to the basic source to find out why we are carrying these people 50 to 60 percent of the cases would be due to under-nourishment.

"If we could give milk, we could materially lighten the relief load, not today, but perhaps 10 years from now. We are extremely worried about the children.

"... red beans and rice and molasses and bread are the staples of diet, particularly in the families of laborers in underprivileged families and among Negroes.

"You can go out here and look at your diseases and malnutrition... on the street -- rickets and things of that kind..."

The relief director was speaking at a hearing held by the United States Department of Agriculture for the purpose of getting evidence on how the Milk Marketing Agreement and Milk Order for New Orleans should be amended.

Federal milk marketing agreements and orders in general fix the prices which distributors pay dairy farmers for their milk. These agreements and orders may be issued by the Department of Agriculture in cities where a substantial part of the milk used moves across State lines. Many of these agreements and orders now provide a special price which dairy farmers receive for that milk which is sold to relief families under approved low-cost milk programs. Nickle-a-quart milk, under such a provision, has been on sale in Boston (see November 1, 1939, issue of Consumers' Guide) and in Chicago for some time.

When it was suggested that the New Orleans Milk Marketing Agreement and Milk Order be amended to permit the sale of milk at 5 cents a quart to families receiving public assistance in New Orleans, the relief director had his chance to speak up.

Getting 5-cent milk takes more than good intentions. It requires cooperation of different kinds from farmers, distributors, local relief agencies, and the Federal Government.

This is how it works, in the broad. Farmers get a price for relief milk which is lower than the usual price they get for milk sold for bottling, but higher than the price they get for milk used in making milk products.

Distributors agree to take over the job of pasteurizing and delivering the milk to the homes or depots where certified relief families get it. For the plan to succeed, they must offer to do this job at a minimum charge. Average net charges of distributors before July 1, were running in Boston at 1.3 cents per quart; in Chicago at 1.4 cents for milk delivered to stations, and 3.7 cents for a quart of milk delivered to a relief home.

City governments have a job to do, too. Their relief agencies agree to certify the families who are eligible to buy nickel milk and the amount they may purchase. In Chicago, the city pays the 5 cents, the price of milk delivered to homes, and 4 cents for a quart bought at a milk station. In Boston, relief families pay 5 cents out of the cash relief funds paid them by the city (WPA workers buy milk for 7 cents). City relief agencies set up and manage the depots, with WPA help, where Chicago and Boston relief families can get their milk.

By the time 5-cent milk is pushed over the counter or delivered, it has cost more than 5 cents. This is where the Federal Government, through the Surplus Marketing Administration, comes in. With money authorized by Congress, the Government agrees to pay the difference between the actual cost of the delivered milk and the direct or indirect contributions made by the city. In Boston, the subsidy amounts to about 0.72 cent a quart; in Chicago, it is 0.98 cent for station-delivered milk, 2.3 cents for home-delivered milk.

On May 15, all the machinery for supplying needy families in New Orleans was in mesh and ready to start. Farmers had agreed to accept 4.3 cents a quart for relief milk. Ordinarily, they get about 5 cents for the same milk sold in bottles to other consumers, and about 4 cents a quart for milk sold to make butter, or cheese, or ice cream. Milk distributors agreed to handle milk for relief families at an average cost of 2.68 cents a quart, which includes the cost of selling the milk at depots, because WPA labor cannot be used for this service in New Orleans as it is in Boston and Chicago. (Beginning July 1, this cost will be cut to 2.53 cents per quart.) The city relief administration has arranged for depots, is certifying eligible families; those on relief pay for the milk out of their cash relief payments, those on WPA pay for it out of their wages. The Federal Government is helping by chipping in an average of 2.68 cents a quart. On July 1, this will drop to 2.53 cents.

How much milk actually flows into the homes of needy families along this nickel route depends on how much these families take advantage of it. So far as they are concerned, they are free to pass it by if they wish. But Boston and Chicago families have been quick to line up. From early August last year to the first of March this year, something like 62,000 quarts of relief milk have been purchased by Boston families every day. In Chicago, some 92,000 quarts a day are moving into needy homes. Still another plan for penny-a-glass milk for Chicago's school children, operating similarly with farmer-distributor-city-U.S. Government collaboration, is being worked out to put this health-giving food within reach of people who otherwise would not get it. In New Orleans, whose milk plan is still young, about 9,000 quarts a day are being purchased.

Consumers in other cities probably wonder why Boston, Chicago, and New Orleans have led in this campaign to apply the milk cure to their health and diet problems. The plan can be put into effect in any city where a Federal Milk Marketing Agreement or Order is in effect and where the order or agreement provides for low-cost milk. Cities that qualify for 5-cent milk right now, but which don't have it are:

Cincinnati, Ohio: Fall River, Mass; Kansas City, Mo.; La Porte, Ind.; Louisville, Ky.; Lowell-Lawrence, Mass.; the Quad Cities -- Bettendorf and Davenport, Iowa; Rock Island, Moline, East Moline, and Silvis, Ill.; New York, N.Y.; St. Louis, Mo.; and Washington, D.C.